THE INFORMATION NEEDS OF LECTURERS AT THE CAPE TECHNIKON AND THE ABILITY OF THE TECHNIKON LIBRARY TO MEET THOSE NEEDS

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ABSTRACT

Although the precursors of the South African technikons date back almost one hundred years, they became post-secondary institutions as recently as 1967. Their libraries have therefore had to be upgraded recently to meet the required educational level. With the technikon movement being so young, there has been little formal investigation of the information needs of the libraries' users. An investigation was therefore conducted into the information needs of lecturers at the Cape Technikon and the ability of the Library to meet those needs. The literature was examined and models formulated to clarify the concepts involved in (a) information and its communication, (b) users and their information needs, and (c) the evaluation of library services in their attempts to meet those needs. Previous studies were also examined to determine what variables should be examined. Various methodologies for an empirical investigation were considered; the survey method was chosen as most appropriate, and a questionnaire was developed to elicit lecturers' self assessment of the importance of specified information needs and their opinion of the Library's ability to meet those needs. Weighted average and percentage proportions were calculated and were used in producing tabulations of the data, profiles (line graphs), histograms and pie charts. The data were then examined for inter-relationships; the results were compared with the results of previous surveys, and conclusions were drawn. The chief findings were that (a) discipline and work activity were the most important independent variables to influence information need; (b) work activity was determined largely by the need for technikon lecturers to change their subject fairly frequently, and by the low level of research at the time of the investigation; (c) the Library was an important source of information to the lecturers, and they

were generally satisfied with the Library's services; (d) citation services were being under-utilised; (e) the Library proved to be inadequate in providing for a strong demand for monographs and for very recently published literature, in providing sufficient work and study space, and in providing adequate resources for research purposes. As a result the following recommendations were made: (a) the Library should provide a comprehensive literature searching and current awareness service for the many lecturers who were having to prepare lectures in new subject areas; (b) because of the importance of the Library to lecturers, it must be adequately staffed and financed; (c) attention must be given to the Library's ability to provide recently published literature, which may necessitate a reconsideration of the current collection development policy; (d) research must be encouraged, and the Library upgraded to provide the necessary resources for research.

PREFACE

It should be noted that in mathematical formulae the symbols used for arithmetic and relational operators are those used in BASIC programming, viz.

Hierarchy	1	( )	parentheses
	2	^	power operator
	3	*,/	multiply, divide
	4	+,-	plus, minus
	5	<	less than
		>	greater than
		=	equal to

In preparing this thesis and in processing the survey the following computer hardware and software were used:

(1) Ontel Amigo 64K CP/M 2.2 microcomputer

(2) C.Itoh 8510A printer for printing the text

(3) Epson MX-80 printer for printing the graphs

(4) Wordstar and Spellstar for word processing

(5) Datastar for data capture

(6) CBASIC to write programs for data processing

(7) DR Graph for preparing the graphs

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ERRATUM

In the Data Tables at the end of this volume, the heading "Ques[tion] no." should be read as "Variable no."

1. INTRODUCTION

The research topic under investigation in this dissertation relates to the information needs of lecturers at the Cape Technikon and the ability of the Technikon Library to meet those needs. The topic implies that there is a twofold problem, viz. (i) determining the information needs of the Technikon's lecturers and (ii) assessing whether the Library is able to meet those needs. While the context of the investigation is the Cape Technikon, this institution may be regarded as providing a model for an understanding of the information needs of technikon lecturers in general.

In introducing the research topic, therefore, the technikon concept and the Cape Technikon in particular will be described briefly to provide the necessary background, the twofold problem of information needs and library effectiveness will be outlined, and an indication given of how the investigation will be approached.

1.1 TECHNIKONS AND THE CAPE TECHNIKON

1.1.1 DEVELOPMENT OF THE TECHNIKON CONCEPT:

Any consideration of the development of the technikon concept is fraught with the problem of inadequate bibliographic documentation of its history and interpretation; in fact, the very concept of what is a technikon is still in a developmental stage, and thoughts on the subject tend to be generalised and fluid.

The origins of the technikon movement in South Africa may be traced to the need in the late nineteenth century to train people for the recently

established mines and railways (Behr 1978, p.125-126, Kellerman 1985, p.2). This led to the establishment of Technical Colleges which subsequently broadened their scope to include training in various commercial aspects such as secretarial and business studies and other vocational training courses. These Technical Colleges were first given official recognition by the Higher Education Act of 1923, and by 1946 there were nine such institutions (Behr 1978, p.127-128, Kellerman loc. cit.).

In 1960, the Schumann commission investigated "Financial relations between the Central Government and the Provinces", and recommended that colleges for advanced technical education should be developed at a tertiary level and that close links with the universities should be established (Malherbe 1977, p.327). This was implemented by the Government in the promulgation of the Advanced Technical Education Act no. 40 of 1967, which initially established the four largest Technical Colleges, viz. Cape Town, Natal, Pretoria and Witwatersrand, as Colleges for Advanced Technical Education. These were post-secondary institutions providing tertiary education at a level similar to that at universities, but with a strong practical and vocational orientation (Behr 1978, p.128-129).

Since the term "College for Advanced Technical Education" was found to be cumbersome in practice, the Goode Report of 1978 recommended a change in name, and in 1979 the term "technikon" was accepted. It should be noted that the term "technikon" is unique to South Africa, although similar institutions are to be found in other countries. Examples are the polytechnics in Great Britain, institutes of technology and the community colleges in the United States, the colleges of applied arts and technology in Canada, the colleges of advanced education in Australia, the technische hochschole in Germany, and the Haifa Technion in Israel. However not all of

these institutions have emphases and goals which coincide precisely with those of the South African technikons.

The Advanced Technical Education Amendment Act no. 48 of 1983 (its short title being the Technikon (National Education) Act) gave the technikons full autonomy as tertiary education institutions on a par with universities (Kellerman 1985, p.3). However, it should be noted that, even with this autonomy, the technikons as institutions do not as yet grant qualifications; these being granted by the Department of National Education, or by professional institutes.

1.1.2 THE NATURE OF A TECHNIKON:

In terms of the 1967 Act, a technikon provides "advanced technical education". This definition implies three concepts, viz. (i) advanced education, (ii) technical education, and (iii) education as distinct from training, and these concepts are commonly interpreted among educationists involved with technikons as follows:

(1) Advanced education, i.e. education at a tertiary level, or, post-Standard 10, in contrast to the institutions now known as "technical colleges" which provide for tuition up to Standard 10 level (including apprenticeship training) and adult education. Technikon qualifications are intended to be on a par with those provided at universities, as can be seen from the hierarchy of technikon qualifications which was based on the recommendations of the Van Wyk de Vries Commission of 1974 (Kellerman 1985, p.6), and which is presented in the table below:

Years of Study	Technikon	University
* M + 3	National Diploma	Baccalaureate
M + 4	National Higher Diploma	Honours Baccalaureate
M + 5	National Diploma in Technology	Masters
M+6	National Laureatus in Technology	Doctorate

* The symbol "M" indicates "matriculation" or equivalent level of education, and this is followed by the number of years of full time post-secondary study required to complete the relevant qualification.

The diplomates (graduates) of the technikons are usually designated as technicians (M+3 and M+4) or technologists (M+5 and M+6), and their status in the work place is usually that of paraprofessionals, who work along side professionals who have been educated at the universities.

(2) Technical education, i.e. education which is career or vocation oriented. Such education emphasises the application of knowledge in contrast to university education where the emphasis is theoretical. The university emphasis is on knowledge for the sake of its intrinsic value, while the technikon emphasis is on knowledge to solve practical problems. The traditional approach at a university is aimed at promoting the general powers of the mind (compare the Robbins Committee report quoted by Behr 1980, p.6). Technikon education, however, is aimed at the development of "practically orientated persons who will be able to apply their knowledge to the full, and in this way make an important direct contribution to the economic life of the community" (Career and study guide / Cape Technikon, 1981, p.5). In general, Technikon courses prepare students for a specific career niche, and they are therefore developed in close co-operation with prospective employers to ensure that the education provided will be of

direct relevance to the work situation. Many courses are therefore taught on a co-operative basis with the student spending up to 50% of the period of study in the work place where closely monitored practical work is undertaken, an approach which is commonly known as "co-operative education" (see, for example, Kellerman 1985, p.11-15). An important implication of this approach is that the content of courses is continually changing to meet new requirements in industry and commerce, with the result that technikon lecturers frequently have to teach revised syllabi or completely new courses.

(3) Education as distinct from training. Training implies minimal theoretical background and a task specific approach, whereas education recognises the need for an in depth theoretical background, and is aimed at the whole person. As a result, technikon education provides a sound theoretical background as a foundation for the application of knowledge, and it also provides for the education of the whole person (compare the Cape Technikon's motto, "Mente manus magistra", i.e. mind, heart, hand). Furthermore, although research is a fairly recent phenomenon in the technikon movement, it has become an essential part of the technikon academic programme (Beukes 1984). Such research, as is technikon tuition, is in a practical direction; it is applied research rather than fundamental research such as that conducted at the universities.

1.1.3 THE CAPE TECHNIKON:

A very brief history of the Cape Technikon (derived from the duplicated booklet An outline of the history of the Cape Technical College 1907 - 1967) will be presented here for contextual purposes .

The Cape Technikon had its origins in evening classes conducted by the

South African College at the turn of the century which resulted in a formal 3-year course in Electrical & Mechanical Engineering being commenced in 1907. In 1909, the course was taken over by the Cape School Board, and the following year the classes run by the Railway authorities at the Salt River Public School were incorporated, the resulting institution being known as the Salt River Technical Institute. It became the Cape Technical College, was gazetted as such in 1922, and moved into its own building on Caledon Square in 1923. Along with other similar institutions (as described above), it was granted tertiary status in 1967 as the the Cape College for Advanced Technical Education, and in 1978 was renamed the Cape Technikon.

The structure of the Cape Technikon follows a pattern similar to that of other technikons, and is as follows. The Technikon is controlled by the Technikon Council which consists of prominent representatives from the local industrial, commercial and academic communities. The academic / administrative head of the Technikon is the Rector. The Technikon is divided into two academic "wings", the Technology Wing and the Humanities Wing, each controlled by a Vice-Rector. The administration is controlled by the Registrar. Each of the academic wings consist of a number of Schools which are administered by Directors, and each School is further divided into subject departments administered by Heads of Department. Within these Departments are Senior Lecturers and Lecturers. At the time of writing (end of 1985), the Schools in the Cape Technikon are:

Technology Wing

School of Architecture & Building
School of Civil Engineering
School of Electrical Engineering
School of Mechanical Engineering
School of Paramedical & Biological Sciences
School of Pharmacy
School of Physical Sciences & Mathematics

Humanities Wing

School of Accounting
School of Art & Design
School of Communication & Languages
School of Food & Clothing Technology
School of Management
School of Secretarial Studies
School of Teacher Training (Commerce)

1.1.4 THE CAPE TECHNIKON LIBRARY:

The Cape Technikon Library was established when the Cape Technical College moved to its new building in 1923. For many years, in keeping with the level of courses taught at the College, it was the equivalent of a high school library, and also functioned to some extent as a "public library" in providing a considerable amount of recreational literature such as fiction and biographies.

The new educational level required by the Advanced Technical Education Act of 1967 clearly meant that the goals and services of the technikon libraries required drastic changes. The former Association of Colleges for Advanced Technical Education produced a report in 1976 (with supplementary Memoranda in 1976 and 1979) entitled Libraries in Colleges for Advanced Technical Education, which sought to set realistic standards for the technikon libraries. It was realised that these libraries required considerable improvement, with goals that were closer to those of a university library, but providing information chiefly at the "undergraduate" level, and to a limited extent for research. Development of the technikon libraries in this new direction was slow at first, and at the Cape Technikon Library it really only began in 1982.

At the time of writing (1985) the Library contains about 27000 volumes, and about 2500 - 3000 volumes are added annually. About 600 periodical titles are received, but only a handful of titles have runs further back than 1980. The standard periodical indexes are subscribed to, but again, these do not usually go further back than 1980. Abstract services are not subscribed to, other than in library science, pharmacy and horticulture. In May 1985 an online bibliographic retrieval service was introduced, but the cost involved has limited its use. Four subject librarians have been appointed, but their subject responsibilities are very wide at present, for example, one subject librarian is required to take responsibility for both art and business studies. With the poor economic climate in 1985, drastic cuts in journal subscriptions and book purchases have had to be made, with little hope of any recovery within the next year or so. From this description it is clear that the Cape Technikon Library is still a long way from what it ought to be, and it would therefore appear to be likely that it is not adequate for the information needs of the Technikon lecturers.

1.2 STATEMENT OF THE PROBLEM:

Many writers (for example, Chweh 1981, p.35, Rzasa & Baker (1972, p.248) have pointed out that a library should not operate in isolation from its users' characteristics and demands. Any evaluation of the success of a library service must first seek to assess what the users expect of the library; in other words it is essential that specific information needs of users be identified before a library can be evaluated.

Such an approach is essential so that future planning of technikon libraries can be undertaken on a factual basis. Moreover, it is essential that technikons have effective and relevant libraries, as this will affect

the future of the technikon's academic programme; if the library fails to meet the information requirements of the lecturers, it will become the means of preventing them from providing the sound and up to date teaching which they ought to be providing.

A technikon library should provide the information needs of two main groups:

(1) Students for their studies

(2) Lecturers for current awareness, lecture preparation and research

As indicated by the research topic, this investigation is aimed specifically at the latter group. From the historical development described in #1.1.3 and #1.1.4, from discussion with lecturers at the Cape Technikon and from observation over the past three to four years, there are indications that the Cape Technikon Library is not able to fully satisfy the expressed information needs of lecturers at present. The result is that certain lecturers appear to ignore the Library, and to use alternative sources for information.

Moreover, since the technikon movement is still young in this country, little, if any, formal research into the information needs of technikon lecturers has been undertaken, and their particular needs are largely unknown except through casual observation. An investigation into the specific information needs of technikon lecturers is therefore essential to enable any meaningful future planning of the technikon libraries to be undertaken.

Using the Cape Technikon as a model, an attempt will therefore be made to measure the extent of the importance attached by the lecturers to various

information needs, and the extent to which the Library is able to meet these needs. In this way, the effectiveness of the Library in its service to the lecturers can be gauged, and a meaningful indication given of directions for future developments in the Cape Technikon Library and in technikon libraries in general.

1.3 RESEARCH QUESTIONS

In the preceding section it was indicated that little, if anything, is known about the information needs of technikon lecturers. It would therefore appear to be futile to propose specific hypotheses, for example, that the information needs of technikon lecturers do not differ from those of university lecturers. A better approach at this exploratory stage would appear to be to propose research questions, and in answering these questions a basic knowledge of the information needs of technikon lecturers can be gained, enabling future researchers to propose hypotheses based on these initial findings. With such an approach in mind, the research questions which need to be asked may be formulated as follows:

(1) What are the information needs of the Technikon's lecturers? What channels and sources do they need for current awareness purposes, finding citations, lecture preparation, and research?

(2) What is the relative importance of each of these information needs to lecturers. How do these needs vary with variables such as discipline, rank, qualifications, experience, and work activity?

(3) How do the lecturers rate the Library in its ability to meet their information needs. In what aspects are the library services adequate or inadequate?

(4) What influence could these findings have on the future planning of the Library?

1.4 PROPOSED METHOD OF APPROACH

In any investigation of this nature, previously published literature in the field should be taken into account. This should be done to provide a theoretical background by -

(1) clarifying the concepts involved,

(2) coming to some understanding of the theoretical framework of the subject,

(3) considering other similar investigations reported in the literature so that the variables to be considered may be determined, and the results of the investigation related to previous research.

As was indicated by Britain (1982) and Krikelas (1983, p.5-6) the literature in the area of user studies is extensive, and covers a considerable time span. Furthermore, Butler & Gratch (1973, p.320-321) have pointed out that the bibliographic control of the literature leaves much to be desired. The task of covering the entire literature is clearly too enormous to be tackled by any one researcher, and an exhaustive treatment will therefore not be attempted.

In searching the literature it is proposed that the Library and information science abstracts (LISA) be searched from its beginning in 1969 to the latest issue available, and that the Annual review of information science and technology be searched from volume 1 to the latest volume available. A search will also be conducted on the ERIC database, and some attention given to the Library literature index. It is expected that the

tracing of citations in the references found from the above searches will yield a considerable number of additional useful references. The bibliography in Smith (1981) which was based on an especially thorough search of the literature (op. cit. p.74-75) is likely to prove a fruitful source of references because of the similarity of the subject matter. References in languages other than English and Afrikaans will be excluded, because of the problem of language.

Having examined the literature, clarified the concepts, examined the theoretical framework of the subject, and examined other reported investigations, it will then be necessary to undertake some form of empirical investigation into the information needs of the lecturers at the Cape Technikon, and an evaluation of the Technikon Library in terms of those needs. This will necessitate some consideration of the alternative methodologies available to determine what method will be used in the investigation, and the method chosen will have to be examined in detail. After the investigation has been conducted, a comprehensive analysis of the results will be required which must also relate those results to the findings of other investigations reported in the literature. Finally, conclusions will have to be reached based on this analysis. As a result, the structure of this dissertation will be as follows:

Users and their information needs : theoretical foundations

Definition of concepts and development of models

Variables to be investigated

A survey of user information needs : methodology

A survey of user information needs : analysis

Conclusions

2. USERS AND USER NEEDS : THEORETICAL FOUNDATIONS

2.1 INTRODUCTION

Having stated the problem in #1.2, consideration will now be given to the theoretical background to the problem. This will be done in preparation for an empirical study which will be discussed in chapters 3 and 4). In this present chapter the relevant concepts involved in the problem will be examined and defined, theoretical models will be developed, and the variables which will require investigation will be examined.

2.2 DEFINITION OF CONCEPTS

2.2.1 INTRODUCTION:

The literature on user studies is plagued by a lack of definition of terms (see, for example, Exon 1978, p.352; Line 1971b, p.7; Line 1974, p.87; Kunz, Rittel & Schwuchow 1977, p.16; Wilson 1981, p.3-5). It will therefore be necessary to examine the various definitions of terms and concepts which may be found in the literature, and to decide how these concepts will be used for the purposes of this present study.

As indicated in #1.4, much has been written on users and user needs within the library and information science field. However, one finds on reading the literature on marketing research that similar investigations have been undertaken into consumer needs, and this literature can therefore provide valuable insights when applied to library services and user needs. There has been a radical change in the field of marketing from a product orientation to a consumer orientation (e.g. Cronin 1985, p.115, Freeman &

Katz 1978, p.38, Kotler 1975, p.7-9), and there is a growing literature on marketing for non-profit organisations (see for example Kotler 1975). These changes have made marketing principles particularly relevant to libraries where there has been a similar swing from a book orientation to a user orientation (Matthews 1983, p.19-21). Furthermore, van Niekerk (1985) has shown that modern marketing philosophy is fully compatible with the philosophy of librarianship. Free use will therefore be made of the insights gained in the field of marketing research wherever they are relevant and applicable. In this respect, it is important to note that almost 20 years ago, Menzel (1966, p.42) stressed the importance of making use of methodologies and concepts developed in other behavioural sciences such as communication, sociology, psychology and systems analysis. An examination of the user and user needs cannot be regarded as an isolated discipline on its own; it is rather one of many manifestations of behavioural science as a whole.

2.2.2 THE CONCEPTS INVOLVED:

An examination of the research topic of this dissertation and of the statement of the problem (#1.2) suggests that there are three conceptual foci involved:

(1) information and its communication

(2) users and their information needs

(3) libraries and their ability to provide the information needs of their users.

Within each of these foci are a number of concepts which require definition. These are summarised below, and examined in detail in the following sections:

(1) Information and its communication: information, information transfer, information channels, information systems.

(2) Users and their needs: user, use, user study, use study, need, want, demand, requirement, preference, segmentation

(3) Meeting the users' needs: benefit / cost benefit, effectiveness / cost effectiveness, standards, criteria, measures

2.2.3 INFORMATION AND ITS COMMUNICATION:

It is not the purpose of this present study to undertake a full investigation of the information communication process, but certain concepts will be discussed to provide a background to the main thrust of this investigation, viz. the information needs of users. In this section therefore an attempt will be made to define information, and consideration will be given to the information communication process as a whole, as well as the various channels and systems used for information communication.

2.2.3.1 Information:

Webster's third new international dictionary (1966, p.1160) defines the verb "inform" as -

> "to communicate knowledge"
> "impart knowledge"
> "inform implies the imparting of knowledge, esp. of facts or events necessary to the understanding of a pertinent matter"

The same source defines the noun "information" as -

> "Knowledge communicated by others or obtained from investigation, study or instruction"
> "facts or figures ready for communication or use ... data"

Information theorists define information more rigorously, for example,

Dictionary of computing (1983, p.175) describes it as "collections of symbols ... Symbols [being] patterns that carry meaning", and Longley & Shain (1982, p.163) describe it as "the meanings assigned to data".

Taking these definitions together, it can be said that raw data may be reduced to symbolic representation which is then processed into a form which is meaningful to human beings at which stage it may be called "information" in its most basic sense. This basic information may be communicated from one person to another, and when a person assimilates this communicated information it becomes knowledge to that person. These definitions therefore imply both a passive meaning (meaningful data) and an active meaning (communication of data).

In addition to defining information as the meaning assigned to data, Dictionary of computing (1983, p.177) and Longley & Shain (1982, p.163, 164) define information as knowledge that was unknown to the receiver prior to its receipt; if the content of a message is known prior to its receipt then no new information is conveyed. Similarly, Krikelas (1983) defined information as any stimulus that reduces uncertainty.

There are many other definitions of information, and Krikelas (1983) has indicated that at least one writer found no less than 29 different concepts associated with "information". (See also Belkin (1978) and Wilson (1981, p.3-4) for further discussion of the concept information). However, it would appear that many of the definitions are similar in concept, and can be reduced to the fundamental sub-concepts indicated above, viz. meaningful data, communication of data, and reduction of uncertainty. This three-fold meaning of "information" will be accepted here for the purposes of this study.

2.2.3.2 Information transfer:

Information transfer is the term commonly used for the communication of information, i.e. the transfer of meaningful data (as distinct from raw data) from one person to another by which the recipient experiences a reduction in uncertainty through the assimilation of previously unknown information.

The three sub-concepts of information described in the previous section may be related directly to the well known Shannon model of communication which represents a source communicating to a recipient via a channel, i.e. input -> throughput -> output. Information as meaningful data is input at the source, information communication is the transmission of such data through the channel, and at the destination uncertainty is reduced as the information is assimilated. A very similar model of information communication was user by Herner & Herner (1967, p.2-3) as a background to their survey of information needs and uses.

One's understanding of information therefore depends on which aspect of a system is of immediate concern. Thus, in considering the stock of a library, one is concerned particularly with information as symbolised, meaningful data; in considering the services offered by a library, one is concerned particularly with information as the communication of such data; but the user of a library is concerned primarily with information as the means of reducing uncertainty. This three-fold concept of information is accepted as a basis for discussion in this particular study, and as its emphasis is largely on the user, the latter aspect of information (that which reduces uncertainty) will be particularly relevant.

A more detailed information transfer model is that proposed by Lancaster & King (1981, p.7-9). It consisted of a spiral with 10 functions in every loop:

(1) Generation of information by scientists, scholars and others who generate ideas or information

(2) Composition of manuscripts containing information by authors and editors by writing and editing

(3) Recording of knowledge by the creation of documents (e.g. books, journals) by publishers

(4) Reproduction of documents by publishers and printers

(5) Distribution of documents by publishers and booksellers

(6) Acquisition and storage of documents by libraries and information centres

(7) Organisation and control of the contents of documents by libraries, information centres, indexing and abstracting services

(8) Identification and location of documents by users, librarians and information scientists through libraries, information centres, indexing and abstracting services

(9) Physical access to documents by users, librarians and information scientists through libraries, information centres, indexing and abstracting services

(10) Assimilation of information from documents by users. At this stage the transfer of information as opposed to documents takes place; the state of the user's knowledge is altered through the assimilation of information and the reduction of uncertainty; and new knowledge may be generated, i.e. the circle returns to point (1) but at a higher level.

This model places an emphasis on published documents as channels of information transfer to the exclusion of informal (e.g. oral) channels, but for the purposes of this study, it may be accepted as a sound representation of the environment in which traditional document-based libraries operate.

2.2.3.3 Information channels:

While the above model emphasises published documents as channels of information transfer, it must be borne in mind that it is also possible for information transfer to take place orally. Thus, Ford (1973) and other writers classify information transfer channels as FORMAL (e.g. books, journals) or INFORMAL (e.g. discussion with colleagues). Following Ford's definitions (loc. cit.) a formal channel may be regarded as one that is freely available for use by a number of people, while an informal channel is one that operates on an individual interpersonal basis. Formal channels may be further classified as PRIMARY (i.e. they provide the actual information) or SECONDARY (i.e. those which lead one to the primary channels, for example, abstracts).

Each of these categories of information transfer channels is commonly subdivided into specific channels (see Barber 1966; Bebout, Davis & Oehlerts 1975; Garvey, Tomita & Woolf 1974; Lipetz 1970; Menzel 1966; Skelton 1973; Wood 1971 and others), thus informal channnels may be subdivided into, inter alia, discussion with local colleagues, communication with colleagues at a distance, attending conferences; secondary formal channels may be subdivided into, inter alia, printed abstract services, computerised abstract services, citations in journals, citations in books, review publications, bibliographies; primary formal channels may be subdivided into, inter alia, books, journals, conference proceedings, trade literature, technical

reports, patents, specifications. Similar channel divisions will be used in the present study.

While investigation of formal channels is common in user research, Brittain (1982, p.145) has pointed out that the use of informal channels is often neglected, yet it is estimated that between 50% and 80% of the communications of the average researcher and academic take place through informal channels such as personal contact with colleagues, telephone calls, conferences and discussion groups. Wood (1971, p.14-16) also referred to studies which indicate that informal channels are used to a greater extent than formal channels. Wood suggested that this may be because information passes through the informal communication network for up to two years before it reaches formal publication, i.e. such information is more up to date than that in the formal channels. In an assessment of the information diaries of 5 researchers, Hall gave results that reveal that 47% of information seeking events were through personal contact, while 35% were through library or bibliographic methods (1974, p.386). Hall suggested (op. cit., p.389) that the obvious preference for informal channels may be that the conversational mode aids in structuring one's thoughts on a topic, i.e. that the performance of these channels is attributable not to the actual information transferred from the other person, but to the drawing of information and ideas from within oneself.

Such speculation suggests that neglect of informal channels arises because they require examination of transient phenomena which are difficult to formalise into scientific data for analysis. Despite this difficulty, any study should at least attempt to gauge the extent of the use of informal information transfer channels, and such an attempt will be included in this present study along with an investigation of formal channels.

2.2.3.4 Information systems:

An essential part of Lancaster's information transfer model discussed in #2.2.3.2 were the various formal information systems such as libraries and information centres. These systems collect, organise and control documents and other resources so that information seekers are able to locate, access, and use the various formal channels described in #2.2.3.3. Thus information users have to deal with both information channels and information systems before they can arrive at the information they require. The importance to the user of adequate information systems is therefore considerable, and this is reflected in statements such as that adopted by the Association of College and Research Libraries in 1966 (quoted by Hamburg, Ramist & Bommer 1972, p.109): "The primary purpose of any library is to serve the reading, reference and research needs of its users. All authorised users of college and research libraries have a right to expect library services up-to-date and commensurate with their needs, provided by competent librarians and founded on adequate collections which are easily available in suitable quarters".

Consideration should be given to the various aspects (i.e. information services) of information systems which are required by users. Lancaster (1977, p.17) has classified the needs of library users in this respect as follows:

(1) The need to obtain bibliographic items whose existence is already known

(2) The need to obtain bibliographic items dealing with a particular subject

(3) The need to obtain the answer to a specific factual question

(4) The need to find a book solely for entertainment

Moving from the user's needs to the library services required to meet those needs, Orr (1968) suggested the following classification of library services:

(1) Document services - providing specific documents on demand

(2) Citation services - providing references, literature searches

(3) Answer services - providing specific answers or data

(4) Work space services - providing reader accommodation

(5) Instruction and consultation services - assisting and advising readers

(6) Adjunct services - archiving, editing, translating

This classification was also used by McElroy (1982, p.252-253) in an investigation of the needs of research scientists at the Syntex Research Centre, in which it was found that they regarded document, citation and answer services in that order as by far the most important functions of the library service.

The points provided by Lancaster and Orr are in fact closely related, and may be combined and simplified into the following table which will be used later in developing a user need model (see #2.2.4.10):

SERVICE	PURPOSE
Reference Services	Data in answer to factual questions
Citation Services	Citations in answer to subject search
Document Services	Documents in answer to known-item search
Ancillary Services	Assistance, work space, photocopying, translation, etc. to enable users to make full use of the first 3 services

2.2.3.5 Conclusion : an information/user environment model:

In summing up the concepts discussed in #2.2.3, it is proposed that an information/user environment model may be developed by combining Lancaster's information environment model (see #2.2.3.3) and Paisley's user environment model (see #2.2.4.9). The resulting model is illustrated in Figure 2.1.

The model shows the user living and working in the midst of concentric systems of diminishing extent. These systems are the cultural and political systems, the professional and reference group systems, the invisible college, the employing organisation, the work team, and finally the user's own thought system. Cutting across these systems are the legal and economic systems, and the formal information system. Within the latter there is taking place the generation of information by scientists and scholars; its composition and recording in manuscripts, which are reproduced and distributed as documents; these are acquired and organised by libraries and information centres; the documents are located, accessed and used by information seekers (users); the information in these documents is then assimilated and may well generate new information to start the cycle afresh.

For the purposes of this study, the assumption is made that this model is a reflection of the information/user environment in which the empirical study will be conducted.

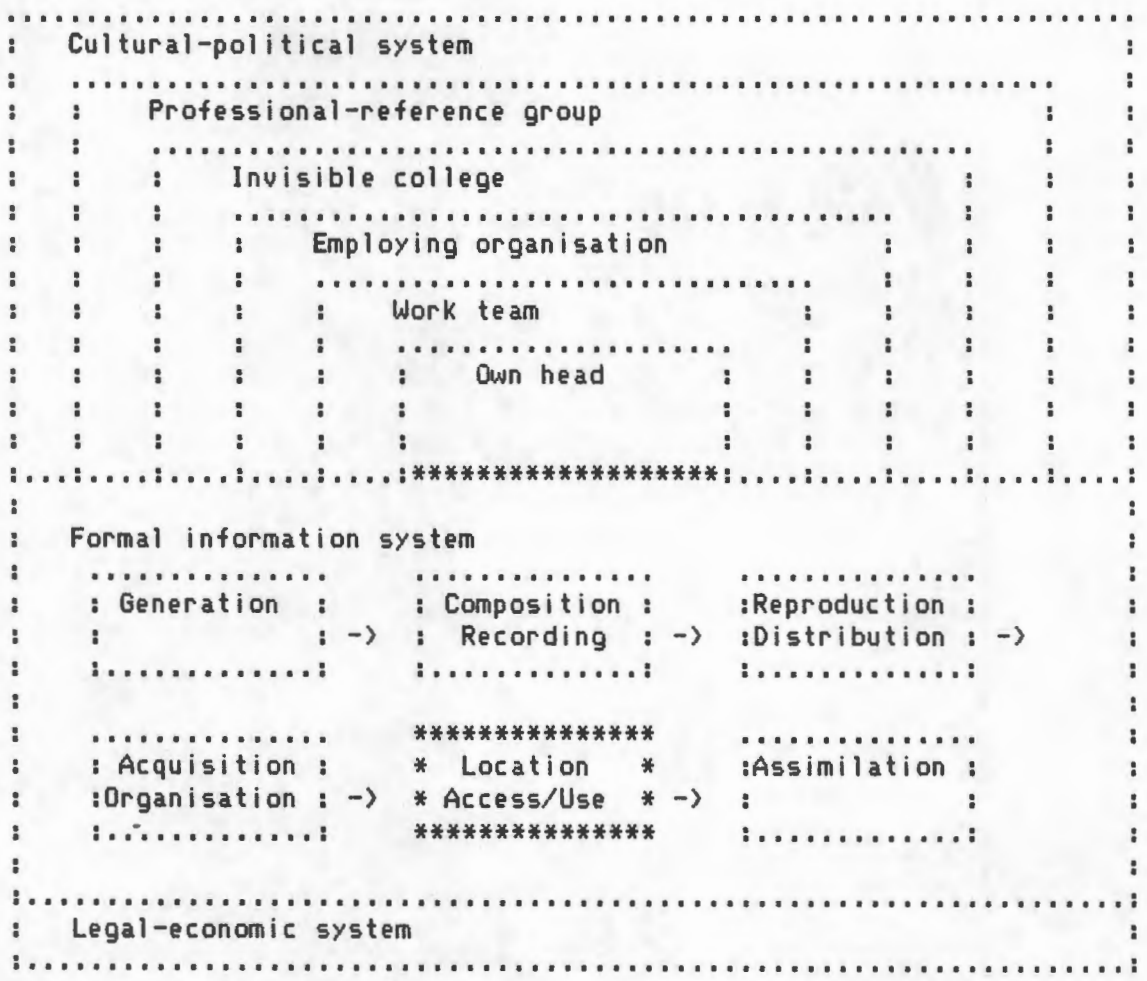


Figure 2.1 An information / user environment model

2.2.4 USERS AND THEIR INFORMATION NEEDS:

The discussion in the previous section on the transfer of information and the reduction of uncertainty implies that information is meaningless without people to use it. It is therefore necessary to examine what is meant by a user of information and information use. It will also be necessary to consider the information needs, wants, demands and preferences of users. With regard to the latter, Line (1974) has provided brief but useful definitions which will form the basis of discussion. Roberts (1975) has criticised Line's definitions as lacking in precision, but his alternative proposal that "need", "want" and "demand" be replaced by terms such as "total potential demand", "individual potential demand" and "group potential demand" has clearly not been accepted by later writers.

2.2.4.1 Users of information:

The term user has been employed to describe an actual user of information, an expected user (e.g. a subscriber to an abstract service), a potential user, or even a non-user. Furthermore, as Kunz, Rittel & Schwuchow (1977, p.16) have reminded us, "the user" as such does not exist beyond the individual. The term "user" is frequently given the sense of "type of user", i.e. a statistical average, and even this does not necessarily represent a group or class of people, but rather a set of information needs. This will be the case in this particular study; lecturers at the Cape TechniKon are in most cases probably actual users (although this will be tested), but they will be considered in groups which represent sets of information needs, and no attempt will be made at this level to distinguish the particular needs of users as individuals. These groups will be considered in detail in #2.2.4.9 when population segmentation

is discussed.

2.2.4.2 Use of information:

Line (1974, p.87) defined use as that which an individual actually uses, and this may be the result of a successful known-item search, or it may be the serendipidous result of browsing or a conversation with a colleague. Cronin (1981, p.41) described use as a complex phenomenon, for example, there are many in-between stages between use and non-use, today's user may become tomorrow's non-user and vice versa, and users vary considerably in their expectations (e.g. level of detail expected in an abstract - op. cit., p.46). The complexity of "use" may be illustrated by some of Garvey, Tomita & Woolf's suggestions (1974, p.116-117) of the ways in which scientists utilise journal articles:

(1) The attainment of professional goals by gaining visibility among scientific peers, and establishing priority in scientific discovery

(2) The establishment of a public body of scientific knowledge, i.e. as an archival repository of researchers' work, integration of research with previous research, a source of accumulated knowledge which can be used to acquaint oneself of the field before embarking on new research, or for the instruction of future scientists

(3) The facilitation of day-to-day scientific work

(4) The advancement of the scientific front.

Roberts (1975, p.312) and Cronin (1981, p.42) warned against understanding "use" solely in the librarian's terms of use of an information system; one must also take into account the ACTUAL USE of an item by the user, i.e. "use" is not necessarily the same as "usefulness". It is precisely at this point that many so-called objective measures of library

effectiveness fail (see #2.2.5.3), since they make the assumption that an objective measure of library use can be extrapolated back to the user's need. A book issue does not necessarily mean that the book met the user's need.

2.2.4.3 User studies and use studies:

These are an examination of the user and use. User studies are concerned with the needs, wants, demands and preferences of users and are people-oriented. Use studies are concerned with the way in which users use an information system and are system-oriented. Krikelas (1983, p.6) indicated a preference for the terms "user-oriented" studies and "library-oriented" studies.

This present study covers both aspects. On the one hand it is a user study in that it seeks to investigate the information needs of lecturers at the Cape Technikon; on the other hand it is a use study in that it seeks to assess the ability of the Technikon's Library to meet the lecturers' information needs.

2.2.4.4 Information need:

Having clarified who an information user is and what information use is, we can now consider what is meant by information needs of users. Line (1974, p.87) defined a "need" as that which an individual ought to have to further an end such as research. If information to the user is the means of reducing uncertainty (see #2.2.3.1), then information need may be defined as a recognition of the existence of uncertainty, i.e. "need" is a recognition that a person's current state of knowledge is less than that perceived to be needed to deal with some issue or problem (see Cronin 1981, p.40, Krikelas

1983, p.8). An information need thus represents a gap in the user's current knowledge.

Wilson (1981, p.7-10) has reminded us that psychologists distinguish three categories of need - physiological, emotional and cognitive which are interrelated. In user study considerations where information and its assimilation by the user to become knowledge is of primary concern (see #2.2.3.1), one is mainly interested in cognitive needs. It would appear, however, that emotional needs can play a role, for example, in the choice of oral channels over written channels, and the choice of easily accessible channels over higher quality channels, aspects which will be discussed later in connection with user preference (see #2.2.4.7).

Since information needs are part of the psyche of individuals, understanding them is clearly not an easy task. Cronin (1981, p.40), for example, has pointed out that information needs may be:

(1) expressed or articulated

(2) unexpressed, for example, if the user does not expect the particular information service to be able to meet that need

(3) dormant if the user is not even aware of a particular need

Burger (1984, p.4-5) has provided a clear diagram that distinguishes among the various possibilities (see Fig. 2.2). Vertically, we can distinguish between conscious and unconscious needs. Unconscious needs may be actual (albeit unrecognised) or potential (i.e. future needs). Conscious needs may be unexpressed or expressed (as demands). Horizontally, we can distinguish between real needs and supposed needs.

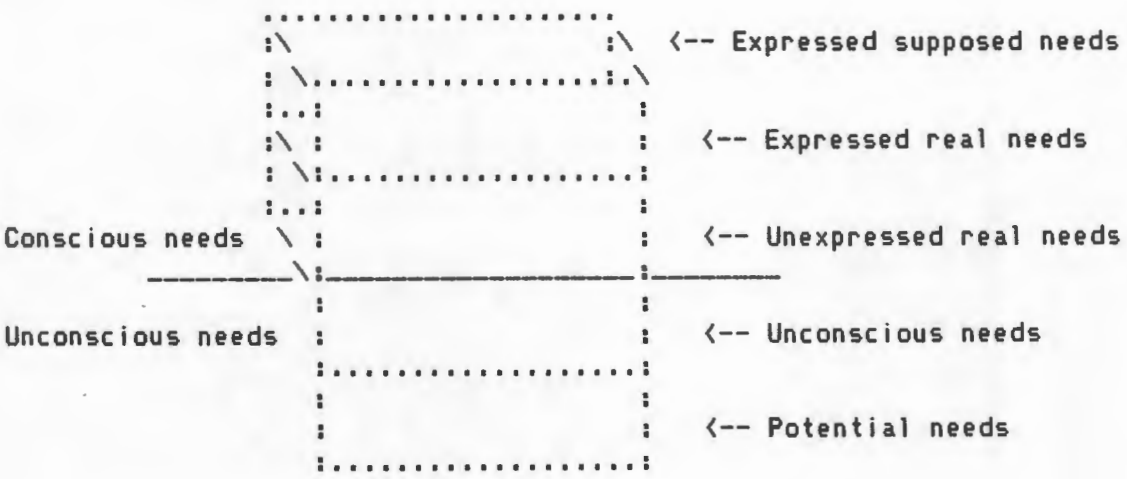


Figure 2.2 Various types of user needs

Dormant or unconscious needs are clearly a problem, but Krikelas (1983, p.8) has described them rather as deferred needs, i.e. they may be unknown to the user at present, but are likely to become known as a search for information progresses. An astute librarian or information scientist can draw some of these needs into the open by careful questioning, but this can only be done on a superficial level; the techniques of psychotherapy would be needed to probe unconscious needs to any great depth. As a result known needs or immediate needs are what are of practical concern in analysing information seeking behaviour, and one can only hope that unconscious needs will surface later as the search for information develops. No attempt will therefore be made in this present study to probe unconscious needs.

Even conscious needs are complex; for example, they may vary according to circumstances. Voigt's study of scientists (quoted in Krikelas 1983, p.12) has suggested that they have three types of information needs:

(1) the current approach - the need to keep up to date with current progress in the field

(2) the everyday approach - the need for everyday information in connection with the course of the scientist's work

(3) the exhaustive approach - the need to find and check through all relevant literature on a subject

2.2.4.5 Information want:

Line (1974, p.87) defined an informantion "want" as that which an individual would like to have; but such a want can differ from a need in than someone may need an item they do not want, for example, they may not be aware of the need for the item, i.e. the dormant or deferred needs referred to above. Alternatively, they may want (and therefore demand) an item they do not actually need, for example, through a misunderstanding of how their need can be met. The term "want" is seldom used in a formal sense in the literature, since, as indicated above, want can be understood as particular aspects of need and demand.

2.2.4.6 User demand:

Line (1974, p.87) regarded information needs and wants as potential demands by users of information systems; he therefore defined a "demand" as that which an individual actually asks for, i.e. a request for an item believed to be wanted. When satisfied, the demand may prove not to be a want after all. Individuals may demand information they do not need, and may need or want information they do not demand. Demand is partly dependent on expectation, which depends partly on existing provision of services. A demand is a potential use.

Roberts (1975, p.311) rightly pointed out that Line's definition of "demand" as that which an individual asks for can be regarded as too narrow, since wants can be satisfied by the user's own action as well as articulation. Kunz, Rittel & Schwuchow (1977, p.17) gave a wider definition of "information demand" as the sum total of all information needs of a distinct discipline or user group, but this again is too wide a definition, more akin to Line's "requirements" (Line, loc. cit.)

The concept of demand features prominently in the literature on marketing research. Kotler, for example, (1975, chapter 5 and 1984, p.12-13) developed the concept of DEMAND into various states of demand, viz. -

(1) Negative demand - where the market dislikes a product and may even pay a price to avoid it

(2) No demand - where consumers may be uninterested in or indifferent to a product

(3) Latent demand - where consumers feel a need for something that cannot be satisfied by existing products

(4) Falling demand - where demand for a product is diminishing

(5) Irregular demand - where demand fluctuates seasonally, daily or even hourly, causing problems of idle capacity or overworked capability

(6) Full demand - where actual demand meets the expectations of the organisation

(7) Overfull demand - where the demand is greater than can be handled by the organisation

(8) Unwholesome demand - where there is a demand for unwholesome products, requiring an "unselling campaign"

Each of these states of demand has its obvious application in relation to the demands of library users for information and the library's services. There may even be unwholesome demands, such as an excessive demand from students for popular magazines instead of study materials which requires an unselling campaign or re-education campaign.

Apart from defining "demand", consideration also needs to be given to the relationship between need and demand. Kantor has pointed out (1982, p.101) that query formulation (i.e. demand articulation) may not represent the actual needs for a number of reasons, such as poor understanding of the problem, poor expository skills, ignorance of the range of available information, or even a desire to bluff. This discrepancy between need and demand has been the subject of much research; for example, the INFROSS investigation showed that information demands of social scientists fell far short of their needs (Line 1971b, p.201-202). (INFROSS is an acronym for INFormation Requirements Of Social Scientists, a very thorough and comprehensive investigation conducted by the University of Bath in 1967-1968). This was attributed by the investigators to three factors:

(1) Lack of time or motivation to read material that could be easily made available or that was readily available.

(2) Difficulty in retrieving information that is known or thought to exist.

(3) Ignorance of of the existence of information that would be of value and relevance.

Wessel (1968, p.464) distinguished four possible situations in the relationship between the expression of a need (i.e. demand) and the need itself, and these categories are presented here in a modified form to make

them mutuallly exclusive:

(1) Unequivocal/unequivocal - where the user has a specific need and can state it unambiguously

(2) Unequivocal/equivocal - where the user has a specific need, but because of lack of information or uncertainty whether the service can fulfil the need it is ambiguously stated

(3) Equivocal/Unequivocal - where the user's need is ambiguous, but because of inadequate thought it is considered to be specific and is therefore stated in an unambiguous manner (compare the discussion of unconscious needs in #2.2.4.4)

(4) Equivocal/equivocal - where the user's need is broad or general and therefore cannot be unambiguously stated.

This can be expressed by means of the matrix illustrated in Figure 2.3 and which will be used later in developing a user need model (see #2.2.4.10).

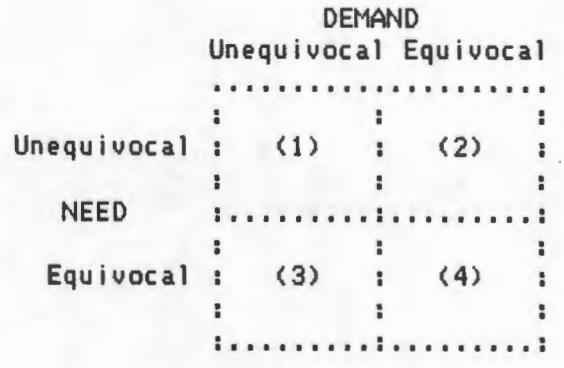


Figure 2.3 User needs and demands

2.2.4.7 User preference:

Even though a user may have clarified an information need to the point where it becomes a clear demand, there remains the question of choice among the various information channels, i.e. the factor of user preference. An example is the common preference by users for informal channels over formal information channels which was discussed under #2.2.3.3.

Ford (1973, p.88) has indicated that accessibility versus quality are important factors in influencing channel preference. Paisley (1968, p.9) and Wood (1971, p.13-14) referred to several studies which indicate that convenience of use, or accessibility of a channel strongly influences a preference for its use. This is so even when its quality is known to be less than another channel which is less conveniently accessible, and this is confirmed by studies of the use of public libraries (Wood 1971, p.18-19).

Similarly, a survey by Rosenberg (discussed by Herner & Herner 1967, p.21) found that the ease of use of an information-gathering method is more important than the amount of information expected. Krikelas used this apparent relationship between accessibility and quality in his discussion of source preference (1983, p.14-17). However, Paisley (op. cit.) quoted at least one study which indicated that although people use channels in proportion to their accessibility and ease of use, they accept ideas from those channels in proportion to their quality. This results in the apparently irrational situation where people use a principle of least-effort in information retrieval but accept a most-effort situation in information processing.

As Krikelas has indicated (1983, p.16), preference for particular information channels is not an either/or choice, but rather the development

of a hierarchy of choices, headed by informal channels such as knowledgeable colleagues, followed by easily accessible formal bibliographic channels, with high quality but relatively inaccessible channels trailing at the end of the hierarchy.

When one considers user preferences for different service channels (i.e. library and information services), there is also the factor of image perception. An "image" is a personalised, internalised, conceptualised understanding of what one knows (Markin 1974, p.121-122). It is what a person believes to be true, i.e. it is subjective knowledge which may or may not correspond to objective reality. People react to the perceived image of a service rather than its reality (Kotler 1975, chapter 7; Markin loc. cit.). This perceived image is a mental construct based on selected impressions and subjective feelings.

This is clearly a difficult area to analyse because of its subjective nature, and also because there have been so few studies of image perception in relation to non-profit organisations (Kotler, Ferrel & Lamb 1983, p.105). Nevertheless, this is clearly an important aspect of user preference; it takes only one bad experience with an information service or an information channel for an adverse image to be fixed in the mind of the user, an image which may not correspond at all to the reality of the usefulness of that service or channel.

2.2.4.8 Information-seeking behaviour:

Having clarified what is meant by a user and that user's needs, demands and preferences, it remains necessary to draw these concepts together in a model of information-seeking behaviour. In terms of the preceding definitions, it may be said that information-seeking behaviour is any

activity undertaken by an individual to identify a message that satisfies a perceived need; it begins with the perception that the current state of possessed knowledge is less than that needed to deal with a particular issue (e.g. a problem), and ends when that perception no longer exists, i.e. with the satisfaction of the need (Krikelas 1983, p.6-7).

Kotler (1975, chapter 7), in examining consumer analysis in relation to non-profit organisations, made the point that analysis is necessary in the following key areas:

NEEDS of the target market

PERCEPTION of services offered, i.e. image perception

PREFERENCES among a set of alternative offerings

SATISFACTION with offerings available

Within the context of these aspects, marketers such as Cundiff, Still & Govoni (1980, p.128-129), Kotler (1984, p.124-131) and Lilien & Kotler (1983, p.198-201) have described a simple model of "buyer behavior" which indicates how people proceed from need identification to the meeting of that need. They postulate that every consumer goes through the decision process illustrated in Figure 2.4.

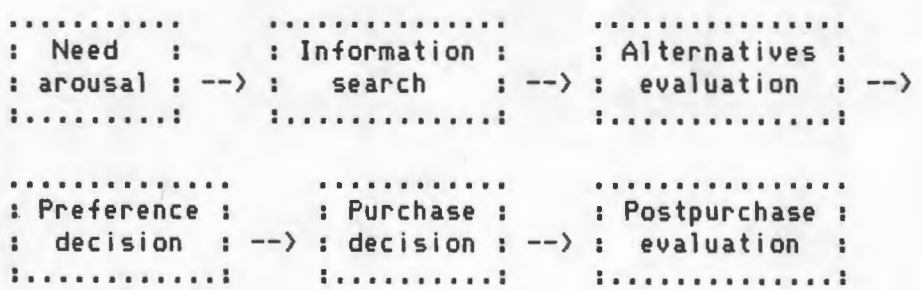


Figure 2.4 The consumer decision process

A similar process takes place with someone seeking information. There is the arousal of a need for a particular element of information through the recognition of a gap in one's knowledge, the formalisation of that need as a conscious want, the expression of the want as a demand , a search for the information, the evaluation of alternative channels of information, the decision to use a particular channel, the use of that channel, and finally, an evaluation of the usefulness of the information found. The model in Figure 2.4 can therefore be modified for our purposes here as in Figure 2.5.

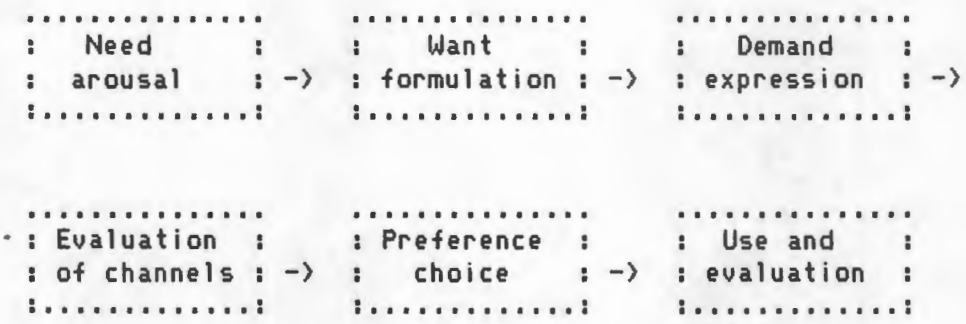


Figure 2.5 The information seeking process

2.2.4.9 User population segmentation:

Implicit in the preceding discussions has been the patent fact that individual users vary considerably in their personalities, in their information needs, demands and preferences, and therefore in their information-seeking behaviour. It is nevertheless possible to group users together who have similar characteristics.

In marketing terms, this identification of groups with common characteristics is called market segmentation. In the past, both marketers and librarians have operated on the basis of mass marketing, i.e. providing

a product with a common denominator to please as many people as possible. The modern trend is towards target marketing where the product is designed to meet the needs of specific market segments. (See, for example, Cundiff, Still & Govoni 1980, chapter 6; Kotler 1975, chapter 6; Kotler 1984, chapter 7). Likewise, libraries today should seek to design their services to meet the needs of specific groups of users (e.g. Brittain 1982, p.147; Halperin 1981b; Matthews 1983). Isolating market segments, and determining the profiles of such segments therefore becomes a major goal in any modern investigation of users.

The segmentation process is not a simple one, as it involves the identification of the characteristics common to the population segments. Segmentation may be a priori, i.e. group descriptions are assigned in advance, or they may be post hoc, i.e. are determined by correlation of other variables (Halperin 1981b, p.81-82). Segmentation can also be undertaken at different levels such as those described by Hanan (referred to by Freeman & Katz 1978, p.39) as:

(1) segmenting the gross market according to its needs

(2) segmenting groups of "needers" according to the benefits they prefer for fulfilling their needs

(3) segmenting the core of heavy users

As Halperin has explained (1981b, p.81), segmentation should meet three basic standards. The segments should be -

(1) measurable - we should be able to obtain information on specific characteristics

(2) accessible - we must be able to serve the particular segment

described

(3) substantial - the segment must be large enough or important enough to merit attention

The characteristics which are used for market segmentation have been described by various writers including Cundiff, Still & Govoni (1980, chapter 6) and Kotler (1984, chapter 5). By combining their information, these characteristics may be set forward as follows:

Geographic	- countries, regions, cities
Demographic	- age, sex, income, occupation
Cultural	- culture, subculture, social class
Social	- reference groups, occupation, economic situation, family, role and status
Psychographic	- motivation, perception, learning, beliefs, attitudes, personality, life-style, life-cycle stage,
Behaviouristic	- knowledge, attitude, use, response to product

Not all of these factors will be relevant to the field of user studies. This was confirmed, for example, by the INFROSS investigation which found that environmental factors had little influence on the information needs of social scientists (Line 1971b, p.206-207). Other factors do in fact have an application in various types of library environment (see, for example, Halperin 1981b; Matthews 1983, p.27-28).

For the purposes of this present study, some factors such as certain membership groups and occupation will be predetermined by prior choice of the particular population, viz. lecturers in a post-secondary educational institution. Other factors such as professional life-cycle (i.e. stages in

an individual's development as a professional) and reference groups are likely to play an important role in segmenting the population in this present study. Details of segmentation of the population will be discussed further in #2.3.2.

Within the field of user studies, Paisley (1968) discussed fairly similar environmental factors in relation to scientists and their information needs. He regarded the scientist as living and working in a series of near concentric circles, these being (from largest to smallest):

(1) The scientist within his culture

(2) The scientist within a political system

(3) The scientist within a membership group (e.g. professional body)

(4) The scientist within a reference group (i.e. group interested in the same specialisation)

(5) The scientist within an invisible college (i.e. colleagues known to each other who interchange information)

(6) The scientist within a formal organisation (i.e. his employing organisation)

(7) The scientist within a work team

(8) The scientist within his own head

Paisley (loc. cit.) also referred to two additional systems which cut across the above systems, viz. the legal/economic system (e.g. copyright, industrial secrecy, competitive research) and the formal information system of libraries, information centres, etc.

This discussion of the principles of population segmentation will form the background to further discussion of segmentation found in related

studies and to be used for this present study (see #2.3.2)

2.2.4.10 Conclusion : a user need model:

This study is particularly concerned with what takes place at the interface between the user and the information system, areas which were marked with asterisks in the information/user environment model (Figure 2.1). At this interface we are concerned with what is going on inside the user's own head, and with the location-access-use aspect of the information use.

This area of activity was presented in summary form in Figure 2.5. By drawing together the details discussed in #2.2.4 it can be amplified as in Figure 2.6. In this model, an information need can be likened to a bubble rising progressively through various processes in the unconscious mind, the conscious mind and the external information/user environment. In the unconscious mind it progresses from being merely a potential need to a specific unconscious need. This unconscious need surfaces into the conscious mind as a need for information to fill a gap in one's existing knowledge. In the conscious mind, there is a vacillation between what one supposes the need to be and what the real need actually is. The outcome of this process is a more or less clearly formulated want which can be expressed as a demand. This demand may still be only an expression of a supposed need, and it may or may not correspond to the real need. The demand or need expression could therefore be expressed in one of four ways, depending on how clearly the real need has been recognised and how clearly the demand is expressed; it may be (1) a specific need which is clearly stated, (2) a specific need which is ambiguously stated, (3) a nonspecific need which is given an unambiguous (and therefore erroneous) statement, (4)

a need which is so broad or general that it cannot be unambiguously stated (see #2.2.4.6 for explanation of these categories). The demand then passes through a preference "filter" when factors such as accessiblity, quality, and image perception of information services and channnels influence the choice of the way in which the need can be satisfied. The service choice may be for reference services if data is required, citation services if citations are required, document services if documents are required, or ancillary services to backup any of these three services. Channel choice may be between informal channels (e.g. the work team or the invisible college) or formal channels (i.e. documents, which may entail the intermediate choice of secondary documents such as abstracts to lead to the final choice of primary information-bearing documents). Of course, service choice and formal channel choice are intertwined, and the final choice is likely to entail a mixture of various services and channels. Finally, there is the actual use of the information borne by the channels. This involves an assessment of the value of the information; if the information fills the gap in the user's knowledge the information is assimilated and one is satisfied; if it does not, the process has to be started from the beginning again with a re-assessment of the unexpressed supposed need.

It will be assumed that this model represents the processes taking place in the users to be investigated in the empirical study as they formulate information needs and then seek out and chose specific services and channels.

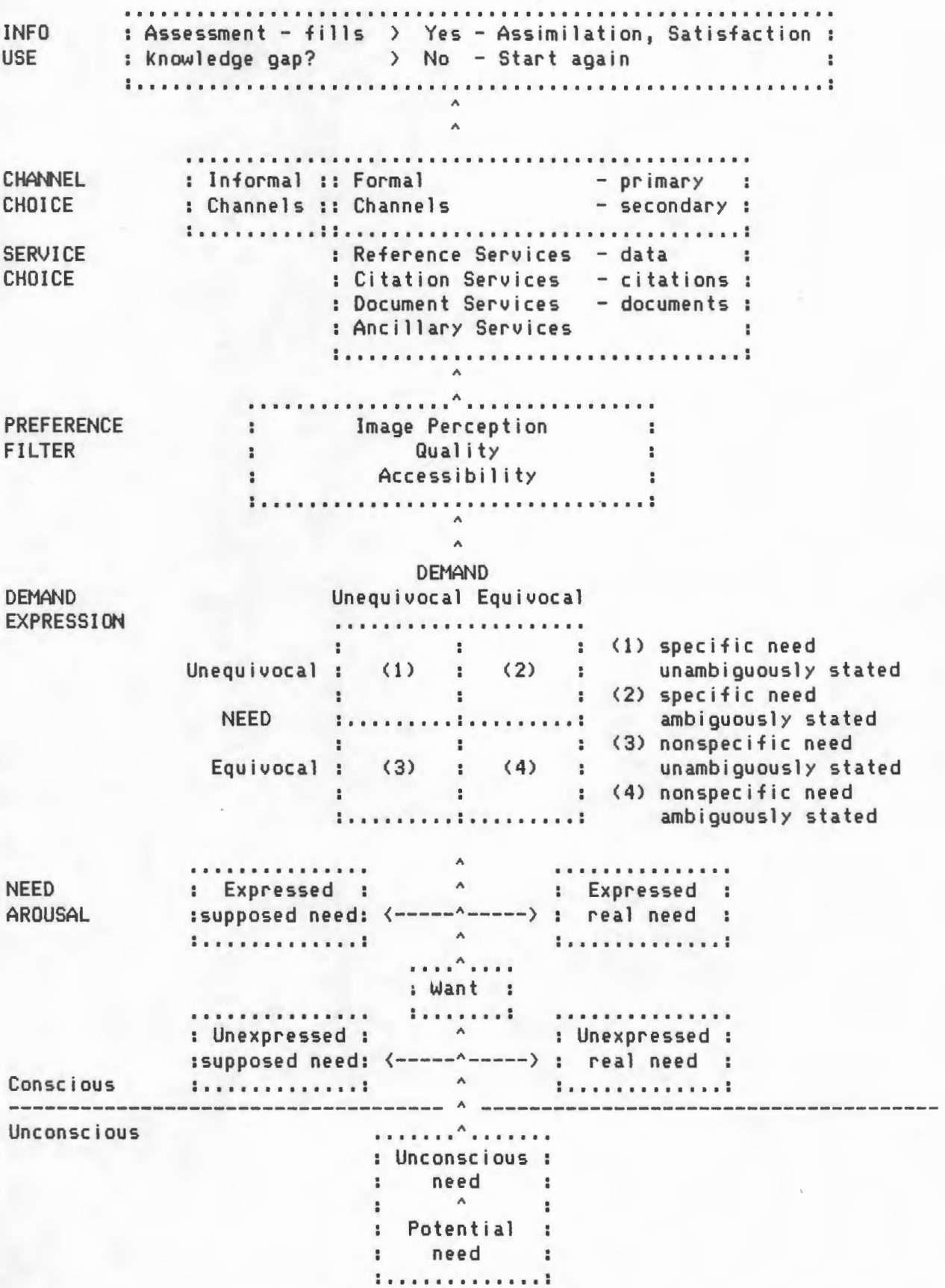


Figure 2.6 A user need model

2.2.5 MEETING USER NEEDS:

So far, consideration has been given to the meaning of information and the manner in which it is communicated, and to information users and various aspects of their information needs. Consideration must now be given to the ability of information systems to meet users' information needs. This will involve the evaluation of such information systems in terms of the demands placed upon them by their users. There are a number of useful surveys of the field which will be used in the following discussion, and these include chapters in the Annual Review of Information Science and Technology (particularly Kantor 1982), Cayless (1976), Kunz, Rittel & Schwuchow (1977), Lancaster (1977), Stecher(175) and Ward (1971).

When reading through the literature, it becomes clear that there are various aspects and levels of evaluation, and one must first of all determine the exact orientation of a particular exercise. It is then necessary to determine what standard is to be used against which a system is to be evaluated. Thereafter, one can determine what particular kind of measure or measures should be used (compare Saracevic, Shaw & Kantor (1977, p.8).

2.2.5.1 Evaluation orientation:

A study of evaluation may be oriented towards the QUALITY of the service, or it may be oriented towards the VALUE of the service. This is clear in the model proposed by Orr (1973), which was also used by Stecher (1975, p.3-4), and which is reproduced in Figure 2.7.

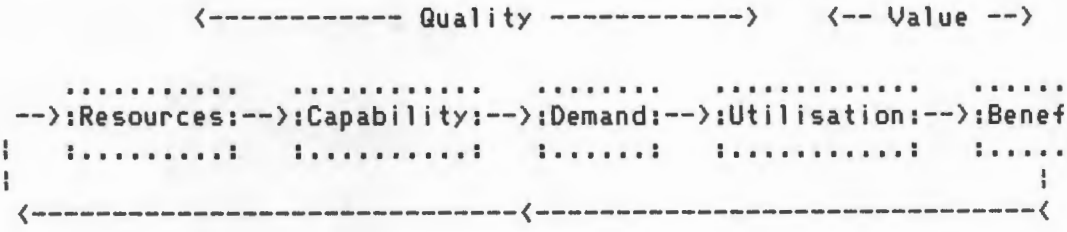


Figure 2.7 Orr's conceptual framework

In this model, an increase in resources normally results in an increase in capability, increased capability increases demand, increased demand increases utilisation, increased utilisation increases benefit, increased benefit results in demands for an increase in resources. Measures of quality are concerned with resources, capability and demand/utilisation, while measures of value are concerned with utilisation and the resulting benefits.

Within this overall schema of quality/value, one can further take into account the cost factor, a factor which is becoming increasingly important in the "age of accountability" (White 1977, p.128) and high inflation rates. Evaluation can therefore be carried out on several different levels (see for example Lancaster 1977, p.1-2), viz.

QUALITY

EFFECTIVENESS, i.e. user satisfaction

COST EFFECTIVENESS, i.e. operating efficiency in monetary terms

VALUE

BENEFIT, i.e. value of the service to the user

COST BENEFIT, i.e. value of the service in relation to the cost of providing it

Since the cost aspects of evaluation are a major field of study in themselves, for practical reasons they will be excluded in the proposed empirical study. In terms of the parameters set out in the introduction (#1.2), the particular concern here is the ability of the Cape Technikon Library to meet the information needs of a certain group of its users, that is, it is concerned with quality of service, or, with library EFFECTIVENESS and the evaluation of effectiveness.

2.2.5.2 Standards of Effectiveness:

Various standards have been suggested against which effectiveness can be measured, and these include library standards, performance measures and library objectives.

(1) Library standards, i.e. statements of minimum or "proper" input of materials, personnel, etc. However, such standards have very serious shortcomings (see, for example, Boon 1982, p.58; Hamburg, Ramist & Bommer 1972, p.123-125). They are usually comparative evaluations of several systems without any reference to system goals or system users. They are usually far too descriptive and general since they are intended to aggregate criteria for many different institutions. They also tend to be arbitrary, since they commonly specify input only, there being little or no concern for the outputs, or results of the library's service. They are therefore not regarded as appropriate for the present study.

(2) Performance, or level of effectiveness. Performance measures generally concentrate on through-put and to a lesser extent on output, and presuppose that user needs are clearly known. Performance measures include recall ratio, precision or relevance ratio, response time, cost effectiveness (see, for example, Lancaster 1977, p.1, 7-8; Rzasa & Baker

1972, p.248, and see further the next section #2.2.5.3 where these concepts are elaborated). While performance measures may be regarded as more appropriate as evaluation standards than library standards, their emphasis on system through-put makes them inappropriate for this study with its emphasis on output and the user.

(3) Objectives, or goals or purpose of the library. Note that, while it is recognised that in the library science literature the term "objective" is used for a similar concept to what educationists call a "goal", no attempt will be made here to distinguish among "mission", "aim", "goal" and "objective". For the purposes of this discussion "objective" is taken to be synonymous with "goal".

This would appear to be the logical starting point in any investigation. Thus, Herbert Goldhor in the foreword to Lancaster (1977) defined evaluation as "the comparison of performance with the objectives of the agency" to see whether change has taken place, and he therefore placed goal definition at the very heart of any meaningful attempt to evaluate a library service. Cayless (1976, p.173), similarly, defined effectiveness as how well a system is satisfying its objectives, in contrast to benefit which he defined as whether the system justifies its worth. In spite of this, Evans, Borko & Ferguson (1972, p.103) in their survey of over 500 bibliographic items to determine what criteria were being used to measure library effectiveness concluded that very few studies attempted to identify the goals of a service, and that this resulted in confusion in the interpretation of the results.

There are, however, problems with the use of objectives as a standard of effectiveness. For example, Stecher warned of two problems when defining

objectives (1975, p.13): objectives formulation can tend towards circularity if objectives are set in terms of current levels of effectiveness (i.e. the tendency to set goals in terms of what has already been achieved), and library objectives are usually highly dependent on the objectives of the parent organisation. To overcome some of the problems Du Mont & Du Mont (1982, p.16-19) presented a detailed "goal typology" to ensure that all constituencies (library administration, library staff, users, society as a whole) were taken into account. To deal with the problem of the application of goals, they also formulated a systems model of library effectiveness consisting of six phases - setting transitive (intended) goals, definition of services, acquisition of resources, formulating reflexive (imposed) goals, providing services, and evaluation (op. cit., p.19-22).

There has been considerable discussion over the years about what the specific objectives of libraries are. For example, after considering various approaches to defining objectives in such a way that criteria can result which may be used for valid measurement, Lancaster (1977, p.5) defined the library as the interface between the universe of bibliographic resources and the library's user population, and its overall objective as making this universe maximally accessible to its users. Hamburg, Ramist & Bommer (1972, p.111) defined library objectives in obverse terms as maximising the exposure of library users to the universe of bibliographic resources. Direct exposure was defined as an event when the user is applying at least one of his senses to a library document (e.g. reading a book); indirect exposure was defined as an event when a library employee communicates to the user as a substitute for direct exposure. Lancaster (loc. cit.) described these two objectives (accessibility and exposure) as opposite sides of the same coin; he stated that emphasising accessibility

suggests a passive approach and is generally characteristic of public and academic libraries, while emphasising exposure suggests an active approach and is generally characteristic of special libraries.

This emphasis on the user in defining objectives is to be found in other authors as well, thus Rzasa & Baker (1972, p.248) defined the primary goals of a university library as -

(1) Maximise user need satisfaction

(2) Minimise time loss to the user

(3) Increase the number of actual users

Boon (1982, p.59-64) also regarded the satisfaction of the user as of primary importance in evaluating an information retrieval system, and discussed. how the user can be involved in the evaluation of every stage of the search process.

This emphasis on the user is also found in the Cape Technikon Library's Collection policy for library documents, an internal document drawn up in 1984. In this document, the Library's goals were specified as follows:

> "(1) The goals of the Library are contingent on the goals of the Cape Technikon". [These goals are given at the beginning of the document]. "Therefore, the Library, as part of the academic programme, functions as the information resource centre for the Cape Technikon, dedicated to the use, rather than the preservation, of recorded knowledge for educational purposes".
>
> "(2) The Library acquires, organises, makes available for use, and promotes the use of library documents to fulfill the information, education, culture and recreation needs of its users". [Explanations of these terms follow].
>
> "(3) The Library acts as a gateway to information outside its own stock through co-operation in networks and interlibrary loan systems, providing access to

information databanks, and referral of users to appropriate alternative sources of information".

For the purposes of this present study, the conclusions which can be drawn from the above discussion are -

(1) Library objectives are the most reliable standard against which to measure library effectiveness

(2) Various writers have concluded that a library's prime objective is the satisfaction of its users' needs.

(3) The stated goals of the Cape Technikon Library include the satisfaction of its users' needs.

2.2.5.3 Measuring effectiveness:

Over the years there has been a shift in emphasis in the measurement of effectiveness. As Saracevic, Shaw & Kantor pointed out (1977, p.8), traditionally library effectiveness was considered in relation to the knowledge environment and its encapsulation in written literature; attention was therefore directed at completeness and balance of collections. More recently, library effectiveness has been considered in relation to the other end of the knowledge communication process, to the users and potential users. Put in terms of the concepts described in the previous section, it may be said that the shift has been from a standards/performance emphasis to a performance/objectives emphasis. Alternatively, one can describe this in systems analysis terms as a shift in emphasis from input/throughput to throughput/output. This is a far more healthy approach considering the problems associated with statements of standards outlined above.

If one accepts that the objective of a library service is to maximise user satisfaction (see #2.2.5.2), then this stress on output rather than

input is a movement in the right direction. Cayless (1976, p.175), following work done by Orr and others, regarded the very essence of effectiveness measurement to be the measurement of output, i.e. the services it provides to its users, such as providing documents, citations, answers, work space and facilities, and instruction and consultation.

This shift towards the measurement of output, however, has brought to the fore the very real problem of a shift from objective to subjective measures. Measures can be described as (see, for example, Lancaster 1977, p.1):

(1) SUBJECTIVE, i.e. the gathering of opinions through surveys or interviews

(2) OBJECTIVE, i.e. quantitative measurement of success, such as transaction counting

(3) a combination of both

Input and throughput measures tend to be objective since one is measuring easily quantifiable inputs and processes, whereas output measures tend to be subjective since one is measuring user satisfaction with all the subjectivity of human nature affecting the measure.

Stecher (1975, p.4-5) severely criticised subjective measures when he wrote that "it seems doubtful, to say the least, that results from subjective satisfaction measures could be taken seriously". He based this on the argument that since library services are usually free, user expectations tend to be excessive, unreasonable, unjustified, highly specialised, etc. (By "specialised", it would appear that he means individualistic). He did, however, concede that subjective measures can be used to measure user preference. Stecher's criticism of subjective measures

appears to be unnecessarily harsh; for example, a transaction count may have the appearance of greater objectivity, but the count remains an arbitrary figure unless it is related back to user needs and user satisfaction, e.g. did the borrowing of a book meet the user's need and bring satisfaction? Viewed in this way, an apparently objective measure inevitably involves people and their opinions, and a subjective element is therefore unavoidable. As Boon pointed out (1982, p.64-65), subjective judgements are inevitable in any scientific research, particularly in the human and social sciences. Subjective judgements are therefore acceptable, as long as their subjective nature is recognised, and suitable steps are taken to control them. Such steps would include systematisation, quantification using suitable scales and analysis using suitable techniques.

Paisley (1968, p.7-10) regarded this subjective area as an important system within which a scientist works, a system which he designated as the scientist within his own head. In fact, he regarded most studies of information needs/uses as measuring variables "in the head", such as awareness, judgement, feelings, preferences, etc.

2.2.5.4 Measurement and the criterion problem:

If evaluation is in essence the gathering of information on how well the library is accomplishing objectives (see above, #2.2.5.2), there is a presupposition that performance CRITERIA are necessary by which achievements can be measured (Knightly 1979, p.174). However, it is recognised that there exists a "criterion problem" in the identification of appropriate criteria, and numerous approaches and measures are found in the literature. Many of the suggested lists of criteria do not make clear the distinctions between quality and value; input, throughput and output; and between

subjective and objective measures. Boon (1982, p.19) also pointed out that one must distinguish between criterion concepts and criterion measures. Criteria per se are performance indicators, expressing specific expectations or preferences; whereas criterion measures are observable variables. For example, "adequacy" of a collection is a criterion, but "number of documents per subject" may be a measure of adequacy.

To illustrate the wide variation in proposed criteria, some of the lists found in the literature will be discussed. Kunz, Rittel & Schwuchow (1977, p.40-41), for example, gave a number of dimensions in terms of which user demands can be described or measured, viz.:

(1) Relevance to the subject field of interest

(2) Appropriateness of the kind of service

(3) Appropriateness of the forms of service (e.g. paper or microform, full or abbreviated bibliographic description)

(4) Adequacy of the quantity of services

(5) Timeliness of information

(6) Speed of information transfer

(7) Relevance of information (selectivity)

(8) Completeness of information

(9) User friendliness of the system

Evans, Borko & Ferguson (1972, p.103) surveyed the literature on measures of library effectiveness, and classified the criteria found into six concepts. These concepts and some of the criteria are:

I. Accessibility

1. Number of services and degree of services offered difference groups of users
2. Ratio of services requested to services available
3. Ratio of holdings to total user population

II. Cost

1. Staff size, skill, characteristics
2. Ratio of book budget to users

III.User satisfaction

1. Satisfaction with services rendered
2. Percentage of collection items by type of material
3. Ratio of items used to materials requested

IV. Response time

1. Ratio of response time to time item is of value
2. Ratio of holdings to response time

V. Cost/benefit ratio

1. Ratio of services provided to total cost
2. Ratio of total cost to number of users
3. Ratio of item cost to item value

VI. Use

1. Gross use of services (e.g. reference questions answered)
2. Total library use (e.g. circulation)
3. Percentage of types of materials used by classes of user
4. Ratio of total use to total holdings
5. Item-use-day (number of items used per day)

However, Lancaster (1977, p.8) rightly criticised the Evans, Borko & Ferguson classification for its confusion of the different levels of evaluation (see #2.2.5.1).

Kantor (1982, p.102) identified 11 foci at which evaluation can be based on measurement. These foci are:

1. Availability - chance that a query will be answered
2. Accessibility - difficulty of obtaining an answer
3. Cost - the cost of supporting the process
4. Delay - another aspect of accessibility
5. Selection - the process of choosing items as the answer
6. Quantity - the amount of service provided
7. Coverage - a relative measure of the retrieved set
8. Item value - "worth" of the items retrieved
9. Set value - "worth" of the retrieved set as a whole
10. Stocking - choice of items added to or removed from stock
11. Indexing - representation of the stock in index files

These foci were grouped by Kantor into subsystems, thus stocking and indexing are concerned with evaluation of the input subsystem; availability, accessibility, cost, delay and selection are concerned with evaluation of the query subsystem; and quantity, coverage, item value and set value are concerned with the evaluation of output from the information system.

Knightly (1979, p.174-175) displayed greater awareness of the various factors involved, and sought to bring some order to the situation by drawing up an evaluation grid. On the one axis he has the basic system elements -

(1) inputs / resources

(2) processes / capability

(3) outputs / utilisation

(4) impact / benefits

while on the other axis he had seven measurement criteria which he claimed will cover all criteria found in the literature -

(1) user opinion

(2) expert opinion (including that of the library's management)

(3) standards

(4) comparison with other organisations

(5) quantifiable processes (e.g. holdings rate)

(6) quantifiable outputs (e.g. circulation)

(7) costs (e.g. unit cost, cost-benefit)

In the sections which follow, measurement criteria will be related to the various standards of effectiveness discussed in #2.2.5.2

2.2.5.5 Measures related to standards:

Traditional measures of library effectiveness which relate to standards include size of budgets, staff, collection, buildings, etc. As indicated in #2.2.5.2 these input measures tend to be arbitrary, and are therefore not considered further.

2.2.5.6 Measures related to performance:

As indicated in #2.2.5.3 performance measures or throughput measures tend to be objective measures. Attempts to determine quantitative measures include various EXPOSURE measures. For example, Hamburg, Ramist & Bommer (1972, p.113-115) recognised three such measures:

(1) Exposure counts of each single use of the library's resources

(2) Item-use-days (number of items used per day)

(3) Exposure time, a refinement of (2) to actual hours of use

and then went on to show how these benefits (output) can be measured against cost (input). These exposure measures were also discussed by White (1977, p.128). De Prospo & Altman (1973) devised an exposure measure of effective user hours, i.e. the time spent by patrons in the library.

Lancaster (1977, p.7-8) summed up the work done in evaluating automated retrieval systems, and in applying them to libraries provided the following performance criteria for measurement of effectiveness:

(1) Coverage - the scope of the library's collection

(2) Recall - the ability to retrieve relevant literature

(3) Precision - the ability not to retrieve irrelevant literature

(4) Effort - the effort required by the user to use the system

(5) Response time - How long the user has to wait for relevant literature

(6) Output - the form of output from the system

Recall and precision ratios are frequently used as measures of performance of information systems, and Lancaster (1979, p.111-117) defined them as follows:

Results of a literature search:

	Relevant	Not relevant	
Retrieved	(a)	(b)	a + b
Not retrieved	(c)	(d)	c + d
	a + c	b + d	

(a) represents the hits, i.e. retrieved items which are relevant; (b) represents "noise", i.e. retrieved items which are not relevant; (c) represents the misses, i.e. relevant items which were not retrieved; (d) represents items correctly rejected because they were not relevant and therefore not retrieved. The Recall Ratio = a / (a + c), i.e. the ratio between the hits and the sum total of the relevant items. The Precision Ratio = a / (a + b), i.e. the ratio between the hits and the sum total of the retrieved items. In a perfect search, a + c = a + b ; but in practice recall and precision are inversely related; as a search is broadened to improve recall, precision is reduced, and as a search is restricted to improve precision, recall deteriorates.

Saracevic, Shaw & Kantor (1977) sought to measure effectiveness in terms of USER FRUSTRATION. They analysed data on catalogue and shelf searches for known items and defined four measures -

user performance
library operations performance
circulation policy performance
acquisition policy performance.

Similarly, Schofield, Cooper & Waters (1975) sought to measure an academic library's stock effectiveness in terms of failure to find sought items owing to titles not owned, titles not available and reader error.

Rzasa & Baker (1972) (see also White's discussion - 1977, p.131-132) sought to measure library effectiveness in terms of maximising user need satisfaction, minimising the time loss (or opportunity cost) to the user while using the library, and maximising the number of actual users. They admitted that no adequate methodology exists to measure time loss and

therefore proposed measuring it indirectly by increase or decrease in the number of users and in the use of library materials. Thus, they proposed an effectiveness measure for a given time period:

$$e = m / N * (1 + (n / N))$$

where N = the total population, n = total number of users within the time period, m = total number of material items used (reshelved) within the time period. They formulated other similar measures in terms of reference questions, use of space, and for distinct subsets of the total population.

White (loc. cit.) pointed out that the main problem with this type of so-called objective measure is that there is an assumption that all material items used actually contribute to user need satisfaction, i.e. one is again brought back to the need to undertake an essentially subjective opinion-based assessment of user satisfaction.

An example of a subjective performance measure reviewed favourably in amongst a number of objective measures (White 1977, p.135-136) is Dougherty & Blomquist's EXPECTATION RATE, where users are asked to estimate the possibility of successfully retrieving an item on a scale from 0 to 10.

Finally, as a background to such measures, one needs to take into account BRADFORD'S LAW OF SCATTER (discussed, for example, by White 1977, p.131-132) which indicates that information sources (and also use of sources) may be divided into three zones in the proportion:

$$\text{Zone 1} : \text{Zone 2} : \text{Zone 3} = n : c * n : c^2 * n$$

where n = number of items or use events, and c = a constant. The implication of this model is that a small amount of material satisfies the

majority of the user's needs, and this has been confirmed by studies such as those of Trueswell's (quoted loc. cit.) that 97% of current circulation was composed of books which had circulated at least once in the past three years. It is chiefly on this basis that many regard the identification of a core collection of material as feasible and in fact desirable in attempting to satisfy user needs.

2.2.5.7 Measures related to objectives:

In #2.2.5.2 it was found that there is wide agreement that one of the main objectives of a library service is the satisfaction of its users' needs. In #2.2.5.3 it was noted that there is a current trend towards measuring library effectiveness in relation to user needs, despite the fact that such measures tend to be subjective. Chweh (1981, p.35-37), for example, insisted that library effectiveness must be measured by USER SATISFACTION in terms of identified user demands. The library is a service agency; service to its users is its raison d'etre; therefore library effectiveness should be measured in terms of how well a service satisfies the demands placed upon it by its users.

It was mentioned above that Stecher considered the only valid use of subjective measures was to measure USER PREFERENCE. One of the few discussions of this aspect in relation to information services has been that of Halperin (1981a) who recognised that preference measures are in the form of judgements or opinions, and are relative rather than absolute. Halperin pointed out many of the difficulties, such as (a) conflicts between user wants and what the library staff see as user needs; (b) analysing trade-offs made by users between levels of the same service (e.g. depth of an online search versus its cost) or between one form of service and another; (c) non-

quantifiable aspects such as staff helpfulness and effect of physical surroundings. Halperin (1981a, p.90-98) then discussed various techniques which can be used to measure user preference, such as ranking, direct judgement methods, trade-off analysis, conjoint analysis, and some of these will be discussed in the next chapter in relation to the proposed empirical study.

Similarly, Menzel (1966, p.45-48) recognised the validity of preference studies despite the problem that most users are not information retrieval experts, and that conscious wants are therefore constrained by their perception of what is feasible. He therefore argued that the goals of such studies must be carefully defined, and these goals must correspond with what the user is capable of judging.

There has been a recent trend away from user satisfaction towards USER SUCCESS, the argument being that that which satisfies the user may not necessarily be that which best facilitates the growth of knowledge. This was investigated by Blom (1983) who sought to assess the effects of the performance of specific tasks (using largely Garvey, Tomita & Woolf's task analysis - see #2.3.2.6) on an information service. While it is important to remember that "user satisfaction" should not be an uncritical attempt to make the user happy, there is a basic problem with such an approach; i.e. it must assume that the information service and its staff are able to understand the real information needs of a particular researcher better than the researcher himself. In most real life situations this is just not the case, and in his conclusion Blom provided little more than the traditional arguments on the balance between subject knowledge and information retrieval knowledge required in an information scientist (op. cit., p.38-39).

2.2.5.8 Conclusion : a library evaluation model:

The discussion in #2.2.5 on the evaluation of library services in their attempts to meet user needs can be summed up in the model in Figure 2.8. It consists, in essence, of a series of choices to be made among alternatives. The first is a decision on whether we are to be concerned with the quality of the service or the value of the service, i.e. with effectiveness or with benefit. Then we need to decide whether the service is to be looked at in financial terms or not. In considering the methods to be used in measuring effectiveness, we first have to decide what standards we are going to measure the effectiveness against. These may be statements of library standards, performance of the services, or the extent to which the services meet their stated objectives; these standards relate broadly to system input, throughput and output respectively, and lie along a spectrum from the objective to the subjective. Having decided this, the specific criteria or measures may then be determined.

As has been indicated in the discussion throughout #2.2.5, the particular emphasis to be placed in this present study will be:

(1) Evaluation orientation - measurement of effectiveness

(2) Standard of measurement - library objectives, particularly the objective of satisfaction of users' needs

(3) Types of measures - user preferences, user satisfaction; subjective measures to be accepted with due precautions.

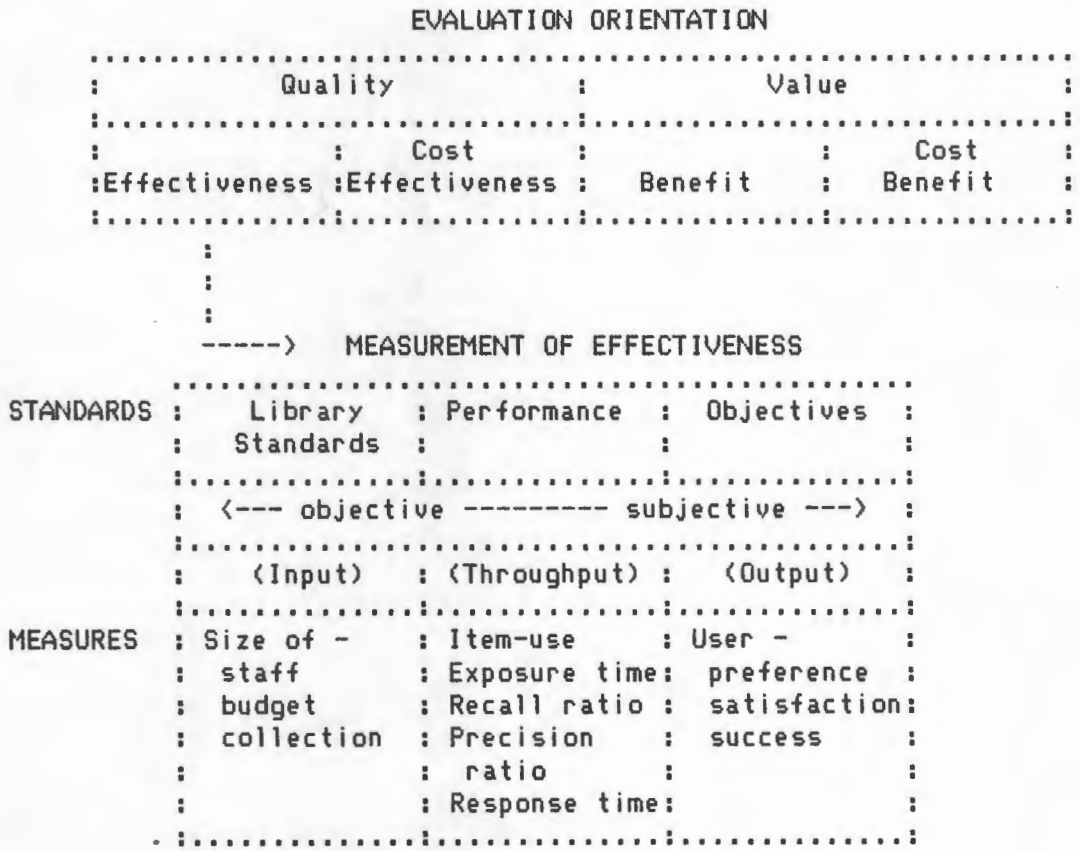


Figure 2.8 An evaluation framework

The definition of the concepts involed and their summarisation into three models above (#2.2.3 to #2.2.5) will form a theoretical background to an examination of the variables which require investigation (see #2.3), and to the execution of an empirical study (see chapters 3 and 4). The particular emphases of this study are user needs and the ability of a library service to meet those needs; therefore, no attempt will be made to formally investigate the psychology of need formulation, nor the aspects of information assessment and information assimilation. It will rather concentrate on (a) needs in terms of service requirements and channel requirements, i.e. on user preferences; and on (b) user satisfaction with the services provided as a measure of the effectiveness of the library service concerned.

2.3 VARIABLES TO BE INVESTIGATED

2.3.1 INTRODUCTION:

Having determined the meaning of the various concepts involved in this study, and having summarised these concepts in the models described in the previous section, it is now necessary to determine what variables should be included for investigation in the proposed empirical study. At the same time, the literature will be examined to see what has been found in related investigations in this field so that the results of this particular study can be correlated with the findings in other similar investigations. However, it must be borne in mind that such correlation may not necessarily be reliable nor valid, since as has already been indicated in #1.1.1, #1.2 and #1.3 the literature is devoid of reports on information needs of technikon lecturers, and it will be necessary to generalise the information on the needs of lecturers in other types of higher education institutions and of researchers in education and industrial institutions. Furthermore, Skelton found that when attempting to correlate a number of user studies they differed considerably in objectives, methodology, samples, scales and definitions (1973, p.139). For these reasons, the results of such studies may not be strictly comparable.

In any investigation, it is necessary to distinguish the various categories of variables involved (see further #3.2.1). For the purposes of this present section, it is necessary to distinguish between independent variables and dependent variables. Independent variables cause an effect on other variables, and they correspond to the type of variables determined by segmentation (see #2.2.4.9). Dependent variables show variation through the effect of one or more independent variables, and they correspond to the

services and channels indicated in #2.2.4.10.

2.3.2 INDEPENDENT VARIABLES:

As suggested above, independent variables correspond to the variables used in the segmentation of populations by common characteristics as was discussed in #2.2.4.9 . When examining the literature on user studies, it is found that some of the frequently used segmentation factors are culture, discipline, rank, qualifications, experience, and work activity. Variables such as culture, discipline, rank and work activity may be related directly to the cultural, professional-reference group, employing organisation and work team systems described in the information/user environment model (see #2.2.3.5).

It should be noted that age is often included in user surveys as an independent variable, but it would appear to be unlikely that age per se is really relevant. Age is commonly related to rank and experience, and it is more likely to be the latter factors that influence user needs rather than age as such. This was confirmed in a study of scientists and engineers at a university by Smith (1981, p.304) which found that age exerted no significant effect on the group's information communication behaviour. Despite its common use in surveys, it will not be used in this study, since rank and experience will be included.

2.3.2.1 Culture:

In #2.2.4.9 it was indicated that Parsley saw the cultural system as one of the important environmental factors influencing the information seeker. Not much work appears to have been done in this direction, but some studies suggest that cultural differences do indeed influence user needs.

Ford (1973, p.91), for example, points out that in at least one study it was shown that British physicists made greater use of formal information channels than did American physicists who tended to rely more on informal channels. In a South African context, one could possibly expect cultural differences between English speaking and Afrikaans speaking lecturers to have an effect on user needs. In the Cape Technikon there is an almost equal proportion of English and Afrikaans speaking lecturers, and this provides an opportunity to test this factor.

2.3.2.2 Discipline:

Before discussing discipline as an independent variable in relation to information needs, it will be necessary to clarify the terminology which will be used and to suggest a classification of disciplines suited to the purposes of this dissertation. The following terms will be used:

SCIENCE - systematised knowledge

NATURAL SCIENCE - systematised knowledge of the natural world or material phenomena; it may be subdivided into the PHYSICAL SCIENCES (knowledge of inanimate matter), and the LIFE SCIENCES (knowledge of animate matter)

HUMAN SCIENCE - systematised knowledge of the spiritual and intellectual constitution of human beings; it may be subdivided into the HUMANITIES (knowledge of the human spirit), and the SOCIAL SCIENCES (knowledge of human society)

BASIC SCIENCE - systematised knowledge of the theoretical aspects of any science; it includes exact science (knowledge derived from quantitative data) and pure science (knowledge derived from self-evident data)

APPLIED SCIENCE - systematised knowledge of the applied or practical aspects of any science; it includes TECHNOLOGY (the application of various sciences to meeting human physical needs)

The traditional university faculties of theology, law, medicine and arts had their origins in medieval disciplines before the development of the modern sciences, but the definitions given in the previous paragraph suggest a classification of disciplines which is rather different, a classification which gives due emphasis to the modern development of the natural sciences, and which provides for the emphasis in technikons on the applied sciences (compare #1.1.2). It is therefore suggested that modern disciplines require a cross classification which allows for the subject of inquiry (viz. inanimate matter, animate matter, the human spirit or human-society), and also the object of inquiry (viz. the theory of the subject, or the application of the subject). The following classification is presented as a suitable background for this particular investigation (note that the examples given of specific disciplines are not intended to be comprehensive).

		Basic Sciences	Applied Sciences
Natural Sciences	Physical Sciences	Mathematics	Statistics
		Physics	Engineering
		Chemistry	Chemical Technology
	Life Sciences	Botany	Agriculture
		Zoology	Medicine
Human Sciences	Social Sciences	Sociology	Economics
		Psychology	Education
	Humanities	Linguistics	Language arts
		Art	Graphic Design

It will now be necessary to consider discipline and its effects on information needs, and the following aspects will be discussed: (a) evidence for a positive correlation between discipline and information needs, (b) evidence for a negative correlation between discipline and information need, (c) reasons for the apparent discrepancy in the evidence, (d) the effect of discipline objective (basic or applied) on information needs, (e) discipline as an independent variable in this present investigation.

(a) Evidence for a positive correlation between discipline and information needs: It is frequently assumed that there are distinct differences in information requirements between the various disciplines. This has, in fact, been clearly demonstrated in studies contrasting the natural sciences and human sciences. Thus, a study by Stephens (quoted by Bebout, Davis & Oehlerts 1975, p.42) showed that literatures of the human sciences (social sciences and humanities) exhibited a great dispersion of publications on different subjects covering a long span of time; whereas literatures of the natural sciences exhibited a high concentration on a select nucleus of special journals covering a brief span of time. Davis & Bentley (1979, p.529) found that lecturers in the natural sciences were more positive in their evaluation of their institutions' library than were lecturers in the humanities and social sciences; thus their survey yielded 86% of the science faculty who expected frequent success in a known-item search, compared with 68% of the humanities faculty and 52% of the social sciences faculty. They attributed this to the more compact nature of the literature of the natural sciences, or, alternatively, to greater use by natural scientists of current periodical literature which would not yet be in circulation (p.530).

Various studies of the differences between the humanities and the natural sciences reveal similar differences. Bebout, Davis & Oehlerts, 1975, p.42) quoted the Westat interlibrary loan study conducted in 1972 as indicating that materials requested in the humanities most often dated 1900-1960 compared with 1960-1968 in the natural sciences and in technology. The same study revealed low use of periodical literature in the humanities (25%) compared with monographs (58%), in contrast with high use of periodicals in the natural sciences. The Stephens study (Bebout, Davis & Oehlerts, 1975, p.42) showed that research in science and technology requires a few journals frequently, while research in the humanities requires a large body of literature of which few titles will be used frequently.

Differences have also been found between the natural sciences and the social sciences. Thus, in a study by Garvey, Tomita & Woolf (1974, p.125), it was found that physical scientists made greater use of technical reports when compared with social scientists, but that the social scientists made greater use of books. In this particular study, however, journal use by these two groups was identical.

Even within the human sciences, differences have been demonstrated between the humanities and the social sciences. Citation studies by Broadus (noted by Lin & Garvey 1972, p.22) showed that citations of books and monographs were more frequent in the humanities than in the social sciences and that citations in the humanities tended to be older.

To sum up, an adaptation of the table provided by Bebout, Davis & Oehlerts (1975, p.43) is presented in Table 2.1. It was based on the evaluation of studies of natural scientists and social scientists by Skelton (1973), and on their own survey of studies in the humanities.

BEHAVIOUR	NATURAL SCIENTIST	SOCIAL SCIENTIST	HUMANIST
Information sources	Most useful sources are journals, trade literature and handbooks. Informal contact is valuable.	Uses monographs and journals to a great extent. Informal contact is valuable.	Uses monographs more than journals. Informal contact is valuable. Older material more important.
Methods of locating references (in rank order)	Personal recommendation, chance, abstracts/indexes. Library not important	Citation, abstracts/indexes, personal recommendation. Library not important	Indexes, personal recommendation, chance. Library is important
Use and function of abstract journals	Scientists use abstract journals slightly less than social scientists. Both use then to a similar extent for current awareness		Fewer abstract journals available in humanities. Use for current awareness
Value of conferences	Pure scientists gain information from social contact; applied scientists from papers presented	Information gained from social contact and papers presented	Information gained from social contact; few papers presented are valuable
Delegation of literature searching	Tends to delegate searching	Tends to conduct own searching	Tends to conduct own searching

Table 2.1 Information requirements in different disciplines

(b) Evidence for a negative correlation between discipline and information needs: There are some studies which appear to indicate that there is little or no correlation between discipline and information needs. Brittain (1982, p.144), for example, found that attempts to find substantial differences among categories of users according to discipline were largely unsuccessful. The INFROSS investigation tended to confirm this in that it found that there were few significant differences in information requirements between disciplines within the social sciences (Line 1971b,

p.204-206). Allen (1970, p.32) found that faculty members in the humanities division of three community colleges had no more favourable attitudes or utilisation patterns than faculty members in other divisions.

(c) Reasons for the apparent discrepancy in the evidence: Studies quoted above have indicated conflicting results, some suggesting that discipline is a significant factor in information needs, while others suggest that discipline is not a significant factor. The apparently conflicting results of these studies may be attributed partly to the use of the term "discipline" in various ways. Thus, it would appear that there are significant differences between broad areas such as the natural sciences and the human sciences, and there are also differences (although to a lesser extent) between the humanities and the social sciences, but that within these broad areas there are no really significant differences between specific disciplines. Thus physicists and chemists have similar information requirements; sociologists and economists have similar information requirements, but the two groups (physical scientists and social scientists) differ considerably in their information requirements.

(d) The effect of discipline objective (basic or applied) on information needs: An interesting recent development in the study of discipline in relation to information needs is mentioned by Exon (1978, p.358-359). It has been realised that the classical division of information activities into subjects of study is overlayed by a different structure based upon processes common to different disciplines. This is particularly noticeable in cross-disciplinary areas; thus Exon found that an archaeologist would display a chameleon-like quality, becoming a palaeographer, a geographer, a nuclear scientist, etc. as the need arose. In areas such as the social sciences where there is a fair amount of cross-

disciplinary study this would be particularly relevant. Thus, on the basis of personal experience, Rush, a university social scientist, made the point that because of the considerable overlap of disciplines in the social sciences, a variety in information services is therefore a prime requisite (1974, p.97).

Closely related to Exon's point about processes common to different disciplines overlaying the traditional structure of disciplines is the difference between basic disciplines and applied disciplines. Thus, Paisley (1968, p.10-11) claimed that it is a well documented fact that "scientists" (by which he apparently means natural scientists working in basic sciences) rely more heavily on literature sources, whereas technologists rely more on oral sources, this being a reflection of the nature of what the two groups produce, i.e. new knowledge from the scientist, and "things that work" from the technologist. Similarly, in a study by Garvey, Tomita & Woolf (1974, p.125) comparing scientists involved in basic work compared with those involved in applied work, the applied scientists made greater use of technical reports, while the basic scientists made greater use of journals and books. Garvey, Tomita & Woolf (1974, p.125) found much the same in their study, viz. that the applied scientists made greater use of technical reports, while the basic scientists made greater use of journals and books. Crane (1971) in her annual survey of the literature on information needs and uses, examined the areas of social interactions (e.g. the "invisible colleges"), intellectual development, communication systems and information-seeking. She pointed out that the basic sciences are characterised by well defined research areas which display a characteristic cumulative growth and decline pattern (p.4). Technology does not normally have these clearly defined research areas (p.5-6), partly because the communication of

industrial research is sometimes constrained by secrecy. The applied nature of technology also means that there is less pressure to place research in the context of previous work as there is in the basic sciences, and this would explain why papers in this field contain few references to previous work (p.6).

This influence of the object of a discipline (i.e. whether basic or applied) is likely to be significant in this particular study, as the entire emphasis in the technikons is on applied knowledge (see #1.1.2).

(e) Discipline as an independent variable in this present investigation: Bearing in mind the conclusions above that only discipline in a broad sense would appear to greatly influence information needs and that technikons lay particular emphasis on applied sciences, it is proposed that three discipline areas be defined as follows for the purposes of this study:

(1) Engineering sciences - mathematics, physics, chemistry, engineering, industrial technology

(2) Life sciences - botany, zoology, physiology, medical technology, pharmacy, horticulture, food technology

(3) Human sciences - sociology, psychology, economics, management, communication, education, art.

It should be noted, however, that these disciplines do not necessarily coincide with the Technikon's Schools (listed in #1.1.3), for example, subjects such as communication and management are taught in a number of different Schools.

2.3.2.3 Rank:

Rank would appear to be an important but variable factor in user studies. For example, Fatcheric (1975), in a survey of the users of the information services of Bristol Laboratory, found a significant difference in library use between directors and non-directors of departments. Directors made greater use of the library, particularly for current awareness, while non-directors tended to rely on monthly bibliographies. Positive reactions to the provision of online services was found among directors, while non-directors were generally negative. Similarly, McElroy's study of research scientists at the Syntex Research Centre (1982, p.254) revealed a heavy bias in library use towards senior staff who accounted for 76% of loans.

However, in a survey of three post-secondary institutions, Davis & Bentley (1979, p.529) found that rank was a significant characteristic in only one aspect of their survey, viz. in expectation of success in a specific item search, there being higher expectation of success the higher the rank.

Ford (1973, p.91) quoted studies which indicated the reverse of the above conclusions, namely that junior lecturers in a university are more likely to use the library, since informal channels of information transfer are more likely to operate at a senior level.

Rank will be included in this present study to determine what influence, if any, it has on the information needs of lecturers at the Cape Technikon. There will be three ranks involved, viz. Lecturer, Senior Lecturer and Head of Department. The latter are regarded in the Technikon as the subject specialists, so that it can be expected that their

information needs will be fairly sophisticated; on the other hand they are also highly involved in administrative duties which may detract from library use.

2.3.2.4 Qualification:

In studies of the users of public libraries, there is a fairly clearly established positive correlation between educational level and library use (see for example Hodowanec 1979, p.216). Since public library users may vary from those with minimal qualifications to the highly educated, such a correlation would be expected.

In a tertiary educational institution, however, an educational level of a bachelor's degree is a minimum, and one could therefore expect further qualifications to have little influence on library use. In fact, a study by Allen (1970, p.32) found that the educational development of lecturers at certain community colleges in the United States had little influence on their library utilisation patterns. Similarly, in a university situation, most of the academic staff are highly qualified or are working towards a higher degree, and little differentiation can be expected. This was in fact found to be the case by Smith (1981, p.304).

On the other hand, in a technikon the range of qualifications is far greater than in a university, and it can be postulated that someone with a master's or doctor's degree would be more familiar with literature sources and information retrieval techniques than someone with a bachelor's degree, and would therefore make more extensive use and more efficient use of a library. To test this assumption, qualification will be included in this study as an independent variable.

The manner in which qualifications are assessed and compared is a perennial problem, but it is proposed to follow the definitions commonly used by technikons. A qualification is assessed as the number of years of full time study beyond matriculation, thus a bachelors degree or a national diploma would be an M+3 qualification. A distinction is made between vertical and horizontal qualification, thus while someone with a National Diploma in Art plus a BSc has an M+6 horizontal qualification, it is only M+3 vertical since the two qualifications are on a similar academic level. This distinction fits well with the intentions of this study, since someone moving, for example, from a bachelors degree to a masters degree can be expected to have a new and different appreciation of information sources and their information needs. Qualifications will therefore be assessed on a vertical basis.

2.3.2.5 Experience:

Length of professional experience as an independent variable has been investigated in some surveys. It would be expected that people with little experience would make heavy use of information sources, while those with long experience would make less use of sources, but would be more sophisticated in their information needs. This was confirmed, for example, by the studies of Garvey, Tomita & Woolf (1974, p.127).

There is another aspect of experience which is particularly important in a technikon, and that is the length of experience in a particular subject. As indicated in #1.1.2, technikon lecturers are required by the nature of technikon education to change subjects from time to time. When a change is made, it may require the investigation of a completely new range of information sources, so that length of experience in a particular subject

may well influence information needs. Garvey, Tomita & Woolf (1974, p.126-127) found this to be the case with scientists who had changed the subject matter of their research; those who had changed recently were making heavier use of information sources, particularly of journals.

In this present study, therefore, both total experience as a lecturer, and length of experience in a lecturer's current subject will be used as independent variables.

2.3.2.6 Work Activity:

Skelton (1973, p.141) pointed out that there may be considerable differences in information seeking behaviour depending on the work environment, for example, researchers in an industrial situation are likely to be governed by time schedules, work loads and research priorities which differ considerably from those in an academic situation. Similarly, Lin & Garvey (1972, p.8-9) suggested that the type of work engaged in is the most important factor influencing information needs, for example, researchers rely less on books than journals since books contain older established information; whereas books are in many cases adequate for those engaged in teaching. Similar results were obtained from the INFROSS investigation, where significant differences were found between researchers and practitioners in the social sciences (Line 1971b, p.205-206).

It might therefore be expected that the varying activities of lecturers such as lecturing at different levels and research might also have an influence on information needs, and it is therefore necessary to consider precisely what activities lecturers are involved in. The core tasks of lecturers at certain South African universities were investigated by Slabbert (1982, p.157-158) and summarised in 8 categories. The ideal amount

of time to be spent on each category was estimated by 6 university principals, and the results are given below:

(1) Lecturing - planning, preparation, delivery and follow up of lectures to undergraduates (33.6%)

(2) Guidance of post graduate students (16.6%)

(3) Research - own research, team and departmental research (22.8%)

(4) Publication - contributions to professional journals (3.6%)

(5) Attending symposia, seminars, congresses, professional meetings (3.3%)

(6) Academic matters - discussion with colleagues and students on courses, curriculum planning, examination work (10.0%)

(7) Administrative matters - liaison with the administration, completion of forms and registers, routine clerical work (4.6%)

(8) Committee work within the university (5.0%)

This suggests that lecturers are engaged in two basic activities, viz. TUITION in its broad sense which includes lecture preparation, classroom instruction, examination work and supervision of advanced students; and RESEARCH in its broad sense which includes own research, departmental research, preparation of papers for publication, and research into course and curriculum revision.

In considering the information needs of lecturers, therefore, a distinction should be made between their needs as teachers and their needs as researchers as was done in the survey of use in the Columbia University Libraries by Mount & Fasana (1972, p.202-203, 208-209), and also in the INFROSS investigation (Line 1971b). Research use was defined by Mount &

Fasana as "Faculty and research personnel's research projects, whether funded by local or personal means or by outside agencies; keeping faculty members and other research personnel up to date in their fields of research". Instruction was defined as "Faculty members' preparation for classroom presentation, or general background development useful for classroom preparation, or guidance of graduate students toward advanced degrees".

With regard to work activity in relation to research, Garvey, Tomita & Woolf (1974) made a detailed study of 2030 physical and social scientists and their information needs at the various stages in the research process. They used an information need schema (1974, p.120) which is reproduced in Figure 2.9. They found that in the early stages (planning, preparation of proposal, preliminary experimentation) information was needed to aid in the perception of the problem, the formulation of procedures and the placing of the problem in the context of other recent research. In the intermediate stage of experimentation and data collection detailed information on techniques and methods was needed. In the final stages of data analysis, interpretation of results and report writing, needs shifted to the general body of scientific knowledge as the scientist sought to integrate the findings into the current state of scientific knowledge (op. cit., p.119-121). A corresponding variation was found in the sources used. The most important sources were preprints at the preliminary stages, technical reports at the intermediate stage and non-local colleagues at the interpretation stage (op. cit., p.121). They also compared the two most important sources, viz. journals and local colleagues, and found these two sources to be almost exactly complementary, i.e. for the kinds of information which journals provide most adequately, colleagues are least

helpful and vice versa. Similar results were found in a study by Wolek (quoted by Ford 1973, p.91) which suggests that engineers tend to use formal information channels during the design stage, but that further modifications arise out of interpersonal communications with colleagues.

STAGE OF SCIENTIFIC WORK

A. Preliminary planning
B. Specific planning: theoretical/ conceptual
C. Preparation of written proposal
D. Preliminary experimentation, field trials or mockups
E. Calibration, pretesting
F. Design & development of equipment & apparatus
G. Formulation of experimentation/ study design
H. Collection of data
I. Analysis of data
J. Interpretation of results
K. Preparation of report of work

NATURE OF INFORMATION NEEDED	A	B	C	D	E	F	G	H	I	J	K
1. To aid in perception/definition of problem	X	X	X	X							
2. To formulate a scientific or technical solution	X	X									
3. To place work in context of similar work already completed	X	X	X	X	X		X	X	X	X	X
4. To relate to ongoing work in area	X	X	X	X				X	X	X	X
5. To select a design/strategy for data collection					X		X				
6. To select a data gathering technique						X	X				
7. To design equipment or apparatus					X	X					
8. To select a data analysis technique					X				X		
9. To enable full interpretation of collected data				X				X	X	X	
10. To integrate findings into current state of knowledge								X	X	X	X

Figure 2.9 Information needs and the research process

The Garvey, Tomita & Woolf study was not confined to an academic situation, and some investigators have found significant differences between researchers in industry compared with researchers in an academic situation (which is likely to be close to the situation forming the background to this particular study). For example, Smith (1981, p.87) and Stevenson (1980, p.78-79) listed the following factors affecting research activity in universities (and therefore the information needs of academic researchers) -

heavy teaching commitment
smaller scale of research
research is less mission-oriented
less pressure from deadlines
less concern with cost-effectiveness

After examining the literature, one is left with the distinct impression that although the information needs of academics as researchers has been examined in some detail, very little work has been done on their information needs for teaching purposes. However, most investigators have found that the information needs of researchers and lecturers are fairly close. This was confirmed by Smith (1981, p.96-98), who quoted studies which tend to indicate that the information needs of researchers and educators are in fact similar, although educators tend to make far wider and more general use of libraries. The INFROSS investigation of social scientists (Line 1971b, p.14-15) made the assumption that the information needs of researchers represents a total set of needs, while the needs of practitioners and educators are subsets of this total, and this was confirmed by the results (op. cit. p.174-186, 223). An inter-relationship

between research and teaching was found, in that when searching for information for research purposes respondents frequently came across information relevant to teaching and vice versa. As could be expected, material of a specifically research nature such as theses and research reports were used less for teaching than for research, whereas material of an educational nature such as audiotapes, videotapes, films, etc. were used in teaching rather than research. Otherwise, the information needs of lecturers were found to be very similar to although broader than the needs of researchers.

This is also found in the experience of people who have worked in both industry and in an academic environment. Thus, Goodman (1974) described his experience as a chemist who moved from industry to a university. He emphasised that information requirements are dependant on the PURPOSE for which the information is going to be used, e.g. research, teaching undergraduates, teaching postgraduates (op. cit., p.7). He also regarded the requirements of university lecturers as less formal and exacting than those of a researcher in industry researching a very specific area (p.11-12). Rush (1974, p.97-98) discussed briefly the different needs of a university lecturer, and concluded that there are differences in a lecturer's needs according to whether undergraduates or postgraduates are being taught, or research is being undertaken. He nevertheless made the important point that "it is a mistake ... to draw too sharp a line between teaching and research: the two are inextricably linked (or ought to be), in that teaching supports research and research supports teaching". The two aspects of a lecturer's activities enrich each other.

Finally, it remains to determine how work activity will be investigated in the proposed empirical study. In #2.2.4.9 it was suggested that the

concept of a professional life-cycle may be a significant factor. A professional life-cycle may be defined as the stages through which an individual progresses in professional development. Such a concept, while also including factors such as qualifications, rank and experience, is essentially a description of work activity, since professionals at different stages of a professional life-cycle are likely to be engaged in different types of work activities.

Little has been found in the literature on the life-cycle of lecturers. Although Slabbert (1982, p.140-141) does discuss the life of a university lecturer in terms of the traditional personality life-cycle, his discussion does not really consider professional activities in this cycle in any detail, nor does it suggest how information needs may change over the years, or with changing circumstances. Nevertheless, it is tentatively proposed that the professional life-cycle can be regarded as having at least three phases:

(1) Study of syllabi and preparation of lecture notes; information needs confined largely to textbooks. This phase covers the first year or so of teaching.

(2) Improvement of lecture notes, growing consciousness of the need to keep up to date; information needs spread to other monographic works and to journals. This phase takes place over the next two to five years.

(3) Expanding knowledge and experience in subject; specialisation such as research and/or curriculum development; information needs become more sophisticated, heavy use of journal literature, development of informal information sources.

It should be noted that the time scale would be highly variable, since

it is likely to vary with experience and the particular subject discipline. Furthermore, since it is fairly common for Technikon lecturers to be called upon to change subjects from time to time (#1.1.2), the cycle could start again at a different level, and more than one cycle in different subjects could overlap at the same time.

2.3.3 DEPENDENT VARIABLES:

In #2.3.2 various independent variables which should be included in the proposed empirical study were examined. In the discussion these independent variables were related to some dependent variables, but the latter must now be examined in greater detail to determine which dependent variables should be included in this study.

As was indicated in the Introduction (#1), this investigation is concerned with two main problems, viz. (a) the information needs of lecturers at the Cape Technikon, and, (b) the ability of the Technikon Library to meet those needs. In #2.2.4.10, a user need model was developed which provides the background for the first problem, and in #2.2.3.8 a library evaluation model was developed which provides a background for the second problem. Clearly, dependent variables relating specifically to these problems must be included in the proposed empirical study.

With regard to the information needs of the lecturers, the discussion (in #2.2.4.4) of the three types of information need, viz. current, everyday and exhaustive, would suggest that information needs in the present context must be investigated in terms of current awareness (keeping up to date), information for lecture preparation and information for research. In addition, attention must be given to the various information services and channels (see #2.2.3.3), such as informal channels, secondary formal

channels and primary formal channels. In drawing these together, it is suggested that the following areas need to be examined:

Current awareness

Places where information is found (i.e. various types of services)

Methods of finding information (i.e. as an indication of preferences between informal versus formal channels)

Citation sources (i.e. secondary formal channels)

Information sources for lecturing (i.e. primary formal channels)

Information sources for research (i.e. primary formal channels)

Age of sources

With regard to the ability of the TechniKon Library's ability to meet these needs, consideration needs to be given to image perception of the Library (which may be estimated by determining how the users see the goals of the service, and also by frequency of use), and to satisfaction with its services (compare #2.2.4.3 and #2.2.4.4). Note that both of these aspects need to be considered in relation to the Library's goal, viz. user satisfaction - see #2.2.5.7. It is therefore suggested that the following aspects need attention:

Image perception - perception of library goals
- frequency of Library use

Satisfaction with - Library services
- Citation sources
- Information sources (for lecturing & research)
- Age of sources

With this outline in mind, specific dependent variables can be considered in relation to the literature and to previous surveys.

2.3.3.1 Current awareness:

Various means of keeping up to date in one's subject may be used, and some of the most common methods include:

(1) Attending conferences, symposia, etc.: These may be expected to provide papers dealing with the latest advances in a subject, and also to provide a forum for discussion with colleagues. In surveys of those attending the American Psychological Association's national convention (quoted in Menzel (1966, p.54-55) more than half of the respondents expected to obtain specific information there, and similar proportions expected this information through the papers, through symposia and through informal discussion. Almost three quarters of those who sought information in this way actually found it. Wuest's survey (quoted loc. cit.) showed that chemists found attending meetings to be an important method of finding out what was being done where and by whom. Studies conducted by the John Hopkins University's Center for Research in Scientific Communication yielded similar results, although they did show that the most useful information came from informal discussion rather than from formal sessions. In Skelton's survey of studies of natural scientists and social scientists (1973, p.145) it was found that similar percentages in the two discipline areas attended conferences. The value placed on conferences as sources of information was highest among basic scientists and lowest among social scientists with applied scientists in between. Smith's survey of university natural scientists and engineers (1981, p.243-245) produced slightly different results in that the engineers rated conferences higher than the natural scientists, and as high as scanning journals.

However, the number of people who are able to attend conferences is

usually limited by financial considerations, and in the INFROSS survey of social scientists (Line 1971, p.417, 427) it was found that only 8% of the respondents regarded conferences as a frequent source of information, while 41% never used conferences as a source of information.

(2) Discussion with colleagues: This is a popular method of keeping up to date, and in the INFROSS survey of social scientists (Line 1971, p.423) it proved to be the second most used method. Similarly, in Smith's survey of natural scientists and engineers (1981, p.243-245), discussion with local colleagues was rated high, second to scanning journals; while correspondence with non-local colleagues was considered less important, especially to engineers.

(3) Scanning journals: This is widely regarded as one of the most important methods of keeping up to date; for example, Wuest (quoted by Menzel 1966, p.49) found that the scanning of journals was the most important method of keeping up to date for chemists. Similar results were found in Smith's survey (1981, p.243-245) of university natural scientists and engineers who regarded this method as the most important for current awareness.

(4) Abstract and index journals: These tend to be less important than the journals themselves; thus, in Smith's survey (1981, p.243-245), abstracts were ranked second by the natural scientists, and only fourth by the engineers. The INFROSS survey (Line 1971, p.423), however, found that abstracting and indexing journals were the most popular method of keeping up to date among social scientists. In general, abstracts are found to be used more for current awareness than for retrospective searches, for example, as was the case in the surveys of natural scientists reviewed by Barber (1966,

p.158) and by Skelton (1973, p.144).

(5) Review journals: Despite the intrinsic value of review articles in keeping up to date, the surveys reviewed by Barber (1966, p.155) and by Skelton (1973, p.144) found that use of review articles by natural scientists and social scientists was low.

(6) Current awareness services: These would include both local (usually manual) services and commercial computerised services. Not many published surveys have sought to assess in-house current awareness services. In the Bristol Laboratory survey Fatcheric (1975, p.247-249) found that 25% of the respondents had never seen their monthly bibliography, and 22% did not use it regularly; however, of those who did use it regularly, 93% found it useful. In the same survey (op. cit., p.249), it was found that 31% were ignorant of the availability of on-line commercial databases, but that 71% of those who had used the service rated it very good. Fatcheric (op. cit., p.250) found that 72% of respondents did not want a personalised selective dissemination of information service, mainly on the grounds that interests were too broad or changing. It should be borne in mind that Fatcheric's survey was institution specific, and that his population of 32 was small, so it would be dangerous to generalise its findings.

In Smith's survey of natural scientists and engineers at a university (1981, p.243-245), both internal and external current awareness services were rated very low. Smith suggested (loc. cit.) that the reason for this was ignorance of the services available.

2.3.3.2 Places where information is found:

Studies consistently show that accessibility is a major factor in the

use of a service (see #2.2.4.7); thus studies of public and even national libraries show that they tend to serve people in the immediate vicinity (Wood 1971, p.19). Services which may be sources of information which are likely to be used by lecturers at the Cape Technikon are:

(1) The Technikon Library: Some past surveys have not been very encouraging with regard to use of an employing institution's library. Slater (quoted by Barber, 1966, p.161) found that 40% of users had tried to obtain information elsewhere before trying the library, and Barber (1966, p.162) quotes from Scott that "more than half of those who had a library did not use it". Similarly, the INFROSS survey of social scientists (Line 1971, p.422) found that only 4% of the respondents found their local library adequate for all their requirements, 33% for most, 36% for some, 24% for a few and 3% for none.

(2) Local university and public libraries: In Smith's survey of university natural scientists and engineers (1981, p.264-265) it was found than use of outside libraries was not great, other university libraries and public libraries being used equally by natural scientists, while engineers tended to use public libraries more.

(3) Personal libraries, both own and those of colleagues: Personal libraries and information files have a long tradition among academics. Koch (quoted in Lipetz 1970, p.5), for example, found that faculty at Dresden Technical University made heavy use of personal information collections and files. Barber (1966, p.159) found from surveys of scientists that the majority of them maintained personal indexes, but the number of references found from them was fairly small. On the other hand Smith's survey (1981, p.259) confirmed that personal libraries were an important means of

providing leads to information. The INFROSS survey of social scientists (Line 1971, p.421-422) sought to assess the extent of personal collections, and the conclusion was that in general people did not build up personal collections to compensate for inadequate library services, rather that there are book-users and non-book-users, i.e. the person who uses libraries extensively will also have a large personal collection.

(4) Other bodies such as research institutes, professional institutes, trade associations, industrial firms and government departments. Use of such bodies as sources can be expected to be specialised and confined to specific disciplines. Economists, for example, may be expected to use trade associations, while engineers may turn to industrial firms for information. In Smith's survey of university natural scientists and engineers (1981, p.264-265) it was found than of sources used outside of the university, research associations were regarded as most important; while professional institutes, government departments and industrial firms were used to a lesser extent. Some use of trade associations was found among engineers, but virtually none among natural scientists. In the INFROSS survey of social scientists (Line 1971, p.417) it was found that 34% of the respondents regularly used government publications, the greatest use being in economics, although this does not necessarily reflect an equivalent use of government departments as sources of information.

2.3.3.3 Methods of finding information:

In this section consideration will be given to methods of finding information, an approach which will provide an indication of the relative importance of informal versus formal channels as well as the relative importance of systematic versus non-systematic searching with chance being

the extreme of non-systematic information finding.

(1) Informal information channels: Consultation with colleagues is the usual informal communication channel, and one which enjoys much popularity. Thus, in the surveys reviewed by Barber (1966, p.152, 161) use of informal channels consistently rated high in the view of scientists. Similar results were found by Hazell & Potter (quoted in Lipetz 1970, p.5) and by Smith (1981, p.254). Garvey & Griffith (quoted in Lipetz 1970, p.9) have even gone so far as to suggest that the informal dissemination of scientific research findings is so efficient that formal publication in journals is unnecessary! However, various surveys (Lipetz, loc. cit.) indicate that younger researchers do not have the same access to informal communication channels and they therefore rely heavily on published material.

One needs to distinguish between consultation with colleagues within the same institution, and consultation with colleagues elsewhere, corresponding approximately with Paisley's work team and the invisible college (see #2.2.3.5). Garvey, Tomita & Woolf's survey of 2000 physical and social scientists (1974, p.125) showed that use of non-local colleagues is lower than use of local colleagues, while Smith's survey of university natural scientists and engineers (1981, p.254-256) showed the opposite. The INFROSS survey of social scientists (Line 1971, p.417) found that in both cases 26% of the respondents regularly used these channels; similarly (op. cit., p.418), in locating references, 27% found internal colleagues very useful, and 23% found discussion with persons elsewhere very useful.

(2) Formal information channels: This would include use of bibliographic sources such as abstract or index journals, or perusal of books or journals: In general these rate high, for example, in the surveys

reviewed by Barber (1966, p.155-157), abstracts were found to be widely used, but more for current awareness than for literature searching. Perusal of journals was a highly rated means of finding information in the surveys of natural scientists reviewed by Barber (1966, p.151-153), as was also the case in Smith's survey (1981, p.254-256). Similarly, in Garvey, Tomita & Woolf's survey of 2000 scientists (1974, p.124-125) use of journals rated as high as use of local colleagues, while use of books was almost as high among social scientists, but lower among natural scientists. In their distinction between basic and applied sciences (op. cit., p.125-127), use of both books and journals was lower in the case of applied sciences. In the same survey (op. cit., p.127, 129), more experienced scientists used both books and journals less than did less experienced scientists. However, the use of abstract journals is not always as high as one would expect from the intrinsic value of abstracts; thus, Wood (1971, p.16) found in a number of surveys that engineers in particular preferred informal channels to abstracts, although the reverse appears to be true for biomedical researchers.

(3) Systematic and non-systematic use of library services: This would include consulting a librarian, using the catalogue, or browsing. Surveys frequently find use of libraries to be disappointing, for example, in surveys conducted by Hazell & Potter, and Koch it was found that use of library services was low (quoted in Lipetz 1979, p.5). Asking a librarian was not rated very high in the surveys reviewed by Barber (1966, p.161-162); similarly, use of a library's catalogue was generally low (op. cit., p. 160). Smith's survey of university natural scientists and engineers (1981, p.254-256) also produced low ratings for use of libraries and librarians, particularly among the natural scientists. The INFROSS survey of social

scientists (Line 1971, p.417-418) produced similar results, for example, for locating references, only 22% found library catalogues to be very useful, only 16% found searching library shelves very useful, a mere 8% found consulting a librarian very useful, and 48% never consulted a librarian! Skelton (1973, p.144) suggested that the reason for low ratings for library services as sources of information may be that users tend to regard libraries as sources of supply of information already identified, rather than as the means by which information may be identified.

Wood (1971, p.16) referred to several studies which have included browsing and which have shown than this is an important information retrieval method despite being an inefficient method. In Smith's survey (1981, p.257-259) browsing was only moderately useful for engineers, and hardly used at all by natural scientists.

(4) Finding information by chance: The term "serendipty" - making happy discoveries by accident - is sometimes used to describe this phenomenon. There appears to be no clear indication of trends in this aspect, thus the surveys reviewed by Barber (1966, p.151-152) and by Skelton (1973, p.149) showed considerable inconsistency in the role attributed to chance in finding information; in some surveys it was rated high, while in others it was rated low. Skelton (op. cit., p.144) did suggest that information is found by chance as often as by systematic methods, and that the most frequent method of chance finding was in the course of routine reading. These results suggests that there may be confusion in the minds of questionnaire respondents as to what is meant by "chance".

2.3.3.4 Citation sources:

Citation sources, or secondary formal channels are those used to locate

references to published literature. To an information expert, the most obvious tool for this purpose is the abstract, yet in reviews of surveys by Barber (1966, p.157-158) and by Skelton 1973, p.144) and in Smith's survey (1981, p.257-259) it was found that the abstract journal is often not the first choice for searching the literature, cited references being considered far more important. This was confirmed in the INFROSS survey of social scientists (Line 1971, p.417-418), where it was found that 59% of the respondents found references in books and journals most useful, over against 32% who preferred abstracts and indexes. In the humanities, the availability of abstract and index journals is very limited, and the finding that their use by human scientists is less (e.g. Bebout, Davis & Oehlerts 1975, p.42, 43) is not surprising.

Separately published bibliographies are, in general, considered fairly important by social scientists, but are hardly used by natural scientists (Skelton 1973, p.144), a trend which was also found in Smith's survey (1981, p.257-259). This can probably be attributed to the rate at which knowledge in the natural sciences changes; printed bibliographies are inevitably several years behind developments even on publication dated. In the humanities, however, they are regarded as more important than abstracts or review articles (Bebout, Davis & Oehlerts (1975, p.42).

Library catalogues are not generally highly regarded as a means of finding citations; thus only 22% found library catalogues to be very useful for this purpose in the INFROSS survey (Line 1971, p.417-418), and in Smith's survey (1981, p.257-259) natural scientists hardly used library catalogues although their use by engineers was greater.

2.3.3.5 Information sources for lecturing and research:

In this section information sources in the sense of formal primary channels will be considered. As was pointed out in #2.3.2.6, work activity plays a significant role in channel preference, and in this particular study it will be necessary to give attention to distinguishing use of channels for lecturing as distinct from research purposes. Primary channels likely to be used by lecturers at the Cape Technikon are:

(1) Reference works: In a study of literature use in British technical libraries, Vickery (quoted in Wood 1971, p.17) found that dictionaries and encyclopaedias were used by only 13% of the respondents. Similar low use was found in Smith's survey of university natural scientists and engineers (1981, p.260-262).

(2) Handbooks and manuals: In Vickery's study (see above), handbooks and data books were used by only 16% of the respondents. Similar low use was found in Smith's survey of university natural scientists and engineers (1981, p.260-262), except that engineers made fair use of handbooks and manuals.

(3) Monographs, including textbooks: Use of textbooks, as would be expected, is found to be above average in a teaching situation (Wood 1971, p.17), and even in Vickery's study of British technical libraries (quoted loc. cit) it was found that 56% of the respondents used textbooks, this being the most frequently consulted type of literature. Similar results were found among social scientists in the INFROSSS survey (Line 1971, p.417) where 57% of the respondents used monographs "often", the highest book use being among anthropologists. A comparison of surveys of natural scientists and social scientists (Skelton, 1973, p.143) found that monographs along

with journals were the main sources of information. In Smith's survey of university natural scientists and engineers (1981, p.260-262), use of monographs ranked second after journals or journal-related literature such as preprints. Use of books in the humanities is generally higher than in the sciences, for example, in the Westat interlibrary loan study (quoted in Bebout, Davis & Oehlerts (1975, p.42) 58% of requests were for books compared with only 25% for journals.

(4) Conference proceedings: Not many surveys have distinguished conference proceedings from other printed material. However, the INFROSS survey (Line 1971, p.417) showed that 32% of social scientists use them "often", highest use being in psychology. Smith's survey (1981, p.260-262) suggested that use of conference proceedings was particularly important to engineers, and they ranked conference proceedings as high as journal literature.

(5) Standards, specifications and patents: Standards and specifications have been shown to be of particular importance to those in production, design and testing (Wood 1971, p.17). This was confirmed in Smith's survey (1981, p.260-262) where it was the engineers who used standard specifications, and not the natural scientists. No use of patent literature was reported in this same survey. This trend is confirmed by Goodman (1974, p.13) who as an industrial chemist who became a university lecturer, criticised his colleagues for their lack of contact with patent literature.

(6) Trade literature: Studies show that trade literature is of particular importance to those in production (Wood 1971, p.17). This was also found by Skelton (1973, p.143) in a study of surveys of natural

scientists and social scientists which revealed that trade literature is an important source for scientists, especially for those in the applied fields. However, Smith reported no use of trade literature among natural scientists and engineers in her survey (1981, p.260-262). Skelton (loc. cit.) warned that trade literature is a loosely defined category, but made the surprising statement that "there is no equivalent information source for social scientists". This is clearly not the case for those in business and economics, areas which are commonly regarded as social sciences.

(7) Journal articles: In many disciplines, journal articles are the most important source of information (Wood 1971, p.17), although their relative importance also depends on work activity, e.g. they are more important to researchers than to those involved in production and technical aspects (Wood, loc. cit.). Smith's survey (1981, p.260-262) showed that use of scientific journals ranked highest with both natural scientists and engineers. A comparison of surveys of natural scientists and social scientists (Skelton, 1973, p.143) found that journals along with monographs were the main sources of information with natural scientists making use of journals slightly more than social scientists. The INFROSS survey (Line 1971, p.417) showed similar results in the social sciences, with 57% of the respondents utilising periodicals "often", the highest being in psychology. In the humanities, however, use of journals is considerably lower, for example, in the Westat interlibrary loan study (quoted in Bebout, Davis & Oehlerts (1975, p.42) only 25% of the requests in the humanities were for journals.

(8) Newspapers: Newspapers are valuable sources of political, economic and historical information. Thus in the INFROSS survey (Line 1971, p.417) it was found that among social scientists newspapers were most frequently

of value in politics, with an overall 16% of respondents using newspapers "often". As might be expected, in Smith's survey (1981, p.260-262) natural scientists and engineers showed little if any interest in newspapers as a source of information.

(9) Age of sources: There is a strong tendency for users to prefer recent literature; thus Clements (quoted in Wood 1971, p.18) found that 90% of the active literature in public reference libraries was less than 20 years old. Half-life studies (Wood, loc. cit.) have revealed that the half-life of literature in electronics is only 1.5 years, and in the biomedical and social science fields it is 3.5 years. (Half-life in this conext may be understood as the period in which the value of a document (e.g. its rate of citation) falls to half of its initial value). However, in the humanities, there is far greater dependence on older material, for example, in the Westat interlibrary loan study conducted in 1972 (quoted in Bebout, Davis & Oehlerts 1975, p.42) 49% of the literature request in the humanities was dated 1900-1960.

2.3.3.6 Image perception : perception of library goals, frequency of library use:

Having completed an examination of aspects of the information needs of lecturers, it is now necessary to examine aspects of the second problem area of this investigation, viz. the ability of the Library to meet those needs (see the introduction to #2.3.3).

As was discussed in #2.2.5.7, a library's objectives provide one of the most reliable standards against which library effectiveness may be measured. It was shown that the Cape Technikon Library's stated policy is the satisfaction of its users, but it would be valuable to investigate what the

users themselves regard as the objectives of the Library. For example, do they see the effectiveness of the Library in terms of the number of people using it, or in terms of the satisfaction of its users?; do they consider precision or recall (see #2.2.5.2) more important in information retrieval?; how important a factor is effort in information retrieval? In essence, this is an examination of image perception, i.e. how does the user see the raison d'etre of the Library.

Another indicator of the user's image perception of the library may be frequency of use. This can be illustrated by a comment made by one lecturer to the writer to the effect that she never uses the TechniKon Library because it has nothing to offer her, a patently false image perception which is reflected in frequency of use (in this case, non-use). Frequency of use is a commonly used variable in questionnaires, an example being that of Rzasa & Moriarty (1970).

2.3.3.7 Satisfaction with the Library's service:

In addition to the users' image perception of the Library, consideration needs to be given to their assessment of the effectiveness of the various services provided by the Library to meet their needs. As indicated in #2.2.3.4 and #2.2.5.8 these services may be classified as:

Reference services, which would include the ability of the Library to answer queries, and the effectiveness of its Subject Librarians

Citation services, which would include facilities such as the catalogue to enable users to conduct a search themselves

Document services, which would include the adequacy of the stock on the shelves as well as the effectiveness of interlibrary loan services

Ancillary services

With regard to the latter, it is not the purpose of this study to examine ancillary services in detail, but the question of availability of space will be included, this being a contentious issue in the Library's current history.

2.3.3.8 Satisfaction with the Library's channel provision:

Finally, consideration must be given to the users' assessment of the Library's ability to meet their needs for various formal channels. In assessing the effectiveness of the Library in channel provision, each of the channels discussed above in #2.3.3.4 and #2.3.3.5 will need to be considered; in other words, what is required is a parallel investigation. On the one hand the need for specified channels must be assessed, and on the other hand the effectiveness of the Library in providing those channels must be assessed.

Having considered the theoretical background for this study, it will be necessary to consider in the following chapter a methodology by which the variables discussed above may be investigated.

3. A SURVEY OF USER NEEDS : METHODOLOGY

Having considered the theoretical framework for this study in chapter 2, it is now necessary to consider the operational framework for an empirical study which will seek to test the research questions proposed in chapter 1.

In this chapter, therefore, various possible research methods will be considered, and it will be shown that the survey method is the most appropriate for the proposed empirical study. The principles of survey design, such as, populations and sampling, questionnaire design and data processing will be discussed, and the application of these principles to the empirical study will be considered. Finally, details of the execution of the survey will be provided.

3.1 CHOICE OF METHODOLOGY

As Leedy points out (1974, p.68), the research method chosen must be appropriate to the nature of the data involved. He distinguishes four kinds of data:

(1) Historical data, consisting of written records of past events.

(2) Experimental data, resulting from observations of differences or similarities between one set of observations and another set of observations each of which has been derived under differing conditions.

(3) Descriptive data, resulting from observation, recording what is observed, and describing phenomena in terms of the data characteristics and relationships.

(4) Analytical data, resulting from observations which are quantified; also known as statistical data.

These four kinds of data demand different research methodologies, the most common being the historical method, the experimental method, and the survey method (which may be descriptive or analytical). Busha & Hart (1980, chapters 2-4), and Leedy (1974, chapters 7-10) discuss these methodologies in detail. Each of these methodologies will be considered in turn as to their relevance to the proposed empirical study.

3.1.1 THE HISTORICAL METHOD:

The historical method is appropriate where the data is primarily documentary in nature, and deals with the significance or latent meaning of history. Since there is no documentary data in connection with the information needs of lecturers at the Cape Technikon, this method is clearly not appropriate, and need not be considered further.

3.1.2 THE EXPERIMENTAL METHOD:

The experimental method traditionally utilises two groups, the experimental group which is allowed to be conditioned by certain variables, and the control group which is sealed off from the influence of these variables. The control group is then used as the standard against which variations in the experimental group can be measured.

The experimental method has hardly been applied to user research in spite of its increasing importance in psychology and social psychology (Kunz, Rittel & Schwuchow 1977, p.38-39). One reason for this is that user studies are usually undertaken to answer a specific problem. Whereas the pure scientist is encouraged to hazard bold hypotheses and experiment freely, the designer of an information system is often expected to produce the perfect answer with a one-shot operation with no opportunity to use

experimentation or trial and error (op. cit., p.46).

A major problem with the experimental method in the social sciences is the possibility that users may not behave normally under experimental conditions, but be influenced favourably or unfavourably by the person conducting the experiment or by the nature of the experiment, thus negating the rigour of the experimental method. As a result it is seldom used in the field of user studies, and will therefore not be considered further for the proposed empirical study.

3.1.3 THE DESCRIPTIVE SURVEY METHOD:

The word "survey" is derived from the Latin words "super" and "videre" and therefore has the basic meaning of looking over or beyond, i.e. it has the broad sense of observation. As a research method, Leedy (1974, p.79) describes the survey as looking with intense accuracy at phenomena, and then describing precisely what is observed. There are a number of observation techniques which may be used.

One such descriptive technique is DIRECT OBSERVATION. According to Kunz, Rittel & Schwuchow (1977, p.27-28) this method may be unsystematic or systematic (i.e. based on precise, predetermined categories), or it may be participative or non-participative depending on whether the observer is involved in the system observed and whether the observed subjects are aware that they are being observed. Observation can be a highly objective technique yielding precise and specific results, but it can also be a costly technique in terms of time and personnel required, and for this reason will not be used other than incidentally in the proposed empirical study.

Another technique is the traditional SURVEY, which commonly utilises some form of questionnaire as the data collecting instrument. Surveys are usually classified as oral surveys or written surveys.

Oral surveys or INTERVIEWS may be structured, i.e. the questionnaire in oral form, or unstructured. The advantages of oral techniques are their greater precision, spontaneity and flexibility. Their disadvantages are their higher cost in terms of time which usually results in reduction of the sample size, and the problems of recording and evaluating the results, especially in the case of an unstructured interview. For these reasons interviews will not be suitable for the proposed empirical study as information is required from as wide a spectrum of the Technikon's lecturers as possible.

Written surveys are usually in the form of the traditional QUESTIONNAIRE which may be mailed or delivered personally. The questionnaire has the considerable advantage of being cost effective if the sample to be surveyed is large, but has disadvantages of a low response rate in certain situations, and the fact that the highly structured and impersonal format may lead to bias which cannot easily be detected. Other written methods include diary keeping (see for example Hall (1974) where tape recorders were used), critical incident studies, solution development records, and the Delphi method which is essentially a written form of the panel technique.

Tull & Albaum (1973, p. 140) distinguish between objectivist survey methods and subjectivist methods, a classification that is also followed by Exon (1978, p.356-357) in a useful "map" of various investigative techniques. In objectivist methods, the investigator does not intrude at all in the survey, and the collected data is interpreted literally.

Subjectivist methods allow the investigator to probe and explore at his own discretion, and the data is examined for indirect meanings and explanations. An interesting subjectivist technique which deserves wider application in the context of library use, is that of "mental mapping" used by geographers and planners and applied to a library by James (1983).

Conditions for an objectivist approach are given by Tull & Albaum (loc. cit.) as:

(1) The respondent and the investigator must have a common understanding of the information required.

(2) The respondent must be able to formulate the information required.

(3) The respondent must be willing to to provide the information required.

Since information science is a social science (Wilson 1981, p.12), it is not surprising that the questionnaire survey, which is a very widely used method of research in the social sciences, is also widely used in the field of user studies. One hardly needs philosophical justification for this, since as Bookstein points out (1982, p.85), if one wishes to know something about people, the simplest and most natural way to proceed is by asking them. The traditional questionnaire survey technique will therefore be used in the proposed empirical study because it is the most suitable technique for use with a large number of people, it is easy to administer and easy to analyse.

In an academic situation, where one is dealing with well educated staff who operate on a professional level, it is reasonable to assume that the conditions for an objectivist approach exist. A formal questionnaire will

therefore be acceptable, and the collected data can be interpreted literally, provided that due precautions are taken in the wording and presentation of the questionnaire.

3.1.4 THE ANALYTICAL SURVEY METHOD:

The analytical survey method is used where the data are essentially quantitative, and goes beyond mere description of the results of a survey to an analysis of the data by making certain inferences from the data. The interpretation of descriptive data is largely verbal and may use descriptive statistical techniques; whereas the interpretation of analytical data makes extensive use of inferential statistical techniques.

This method commonly uses similar techniques for gathering data as those used for the descriptive survey, but the data are quantified. Problems with the quantification of data in user studies has already been discussed in Chapter 2. In particular, the subjective nature of data in user studies was discussed in #2.2.5.3 where it was shown that in spite of problems with the subjective nature of user opinion such data is valid, provided than suitable precautions are taken. The data from the proposed empirical study will therefore be quantified so that the results can be analysed by using both descriptive and inferential statistical techniques.

3.2 SURVEY METHODOLOGY

Having considered possible research methodologies, and having determined that the survey method will be the most appropriate for the proposed study, consideration must now be given to specific principles and aspects of survey methodology.

Survey design involves the careful planning of all aspects of the survey. Matters which will be considered are the variables involved, the units of analysis, the population definition and sampling, data gathering methods, sources of error in questionnaires, question construction, question sequence, scaling, and data analysis.

3.2.1 VARIABLES:

Distinction needs to be made between -

(1) Constants, i.e. concepts which have only one property which never changes

(2) Variables, i.e. concepts which have one or more properties which vary along a continuum of mutually exclusive characteristics

Variables may be further distinguished as -

(1) Independent variables, i.e. variables which cause an effect on other variables

(2) Dependent variables, i.e. variables which display variation through the effect of one or more independent variables

(3) Controlled variables, i.e. variables which are deliberately controlled to ensure that the cause and effect of independent and dependent variables is not due to extraneous uncontrolled variables

For the purpose of the proposed empirical study, certain variables will be controlled by careful definion of the population (see #3.2.3). Information from respondents will be elicited to define possible variations in the independent variables such as discipline, qualifications, rank, experience, work activity which were discussed in #2.3.2. Similarly, information will be elicited about dependent variables such as the need for certain information requirements, and the effectiveness of the Library in

meeting those requirements, following the dependent variables which were discussed in #2.3.3.

3.2.2 UNITS OF ANALYSIS:

In a sociological study the units of analysis may be individual people or various groupings of such people including their grouping into institutions.

For the purposes of the proposed study individuals will not be analysed, but rather the population as a whole, or subsets of the population. Thus, groups of people such as lecturers in various disciplines (see #2.2.4.9 on market segmentation) will be of prime importance. In terms of the subject of the study, the Cape Technikon Library as an institution will also be an object of analysis.

3.2.3 THE POPULATION:

Busha & Harter (1980, p.56-57) define a population as any set of persons or objects that possess at least one common characteristic. The population for the proposed study may therefore be defined as full time lecturers at the Cape Technikon who are actively engaged in teaching and/or research. Part time lecturers will be excluded, since from prior observation it can be said that their use of the Technikon's Library is minimal. Furthermore, those academics who spend most of their time in managerial work will also be excluded since their information needs are likely to be different from those in teaching and research. A similar distinction is made in the personnel categories in the South African Post-Secondary Education Personpower Resources Reporting Manual (Manual SAPSE-007), which distinguishes between Instruction/Research Professionals who

spend at least 50% of their time in instruction and research activities, and Executive / Administrative / Managerial Professionals whose primary responsibility is for the management of the institution or a recognised department. On these grounds, therefore, the Rector, the Vice-Rectors and the Directors of Schools will be excluded from the definition of the population. Academic staff in the Bureau for Student Affairs, and the Teaching Development Unit will also be excluded, since their work activities differ considerably from those of the average lecturer.

3.2.4 SAMPLING:

Many populations are too large to observe every occurrence of a variable and for practical reasons a sample of the population is therefore drawn. As indicated by Tull & Albaum (1973, p.46), such a sample must be:

(1) Representative (i.e. it must mirror the characteristics of the population)

(2) Adequate (i.e. of sufficient size to provide confidence in the stability of its characteristics).

As was pointed out by Simpson (1983, p.60) and Line (1982, p.36) the size of the sample determines the precision of the results, the actual number in the sample being more important than the fraction of the population it represents. This was elaborated by Moser & Kalton (1979, p.146), who explained that for large populations, the finite population correction (N-n)/N is close to 1 and the precision of the results therefore depends upon n the size of the sample, not on n/N the sampling fraction.

In this particular study the entire population is just under 260, which is a fairly small number and represents a manageable size for a

questionnaire survey; it will therefore not be necessary to draw a sample from the population for administrative reasons. However, it is intended to stratify the population according to independent variables such as subject discipline, and care will therefore be needed to ensure that sub-populations do not form samples of such a size that confidence in the precision of the results is lost. It will therefore still be necessary to determine the minimum sample size for this particular survey.

A simple formula (based on normal distribution parameters) for determining the size of a sample is given by Carpenter & Vasu (1978, p.39) and Tull & Albaum (1973, p. 47):

$$n = (z * s / E)^2$$

where n = sample size

s = standard deviation

E = amount of error to be allowed

z = desirable accuracy in z-score units

A confidence level of 95% is widely accepted as adequate, i.e statistically one can be "confident" that 95% of the data will fall within the limits required. A 95% confidence interval is equivalent to 1.96 standard deviation units or z-score units (loc. cit.).

In the proposed study, the maximum amount of error that can be allowed is 0.49, since anything greater will round up to the next point on the scale (see #3.2.9.2 for details of the scale to be used). Assuming the use of a five-point scale (see #3.2.9.2) and a normal distribution, the expected standard deviation can be calculated as follows from the formula for determining the standard deviation (see for example Carpenter & Vasu, 1978, p.18):

$$s^2 = \text{sum}(X-M)^2 / n$$

where s = standard deviation

X = values of variables

M = mean value of X

n = number of observations

Possible Scores (X)	Variation from Mean (X-M)	Variation Squared (X-M)^2
1	-2	4
2	-1	1
3	0	0
4	1	1
5	2	4

The standard deviation in this case is 1.41. We can therefore calculate the minimum size of a valid sample as follows:

$$n = (1.96 * 1.41 / 0.49)^2$$

$$= 32$$

In other words, the minimum sample size to achieve a confidence level of 95% is 32, and it will be necessary to ensure that any sub-populations in this survey do not fall significantly below this level.

3.2.5 DATA GATHERING METHODS:

Data may be gathered in many different ways, some of which are described below -

(1) Ranking: Respondents are asked to rank a set of stimuli in rank order from high to low.

(2) Rating: Respondents are asked to rate a concept (or person, object, etc.) along a continuum or in one of an ordered set of categories.

Rating scales are generally ordinal, but can be used to produce interval scales. An example of the use of rating scales is the direct judgement method to yield "importance scores" indicating the relative importance attached by respondents to certain aspects (Halperin 1981a, p.91-92).

(3) Item lists: Lists of prespecified attributes are presented to respondents who are asked to assess them by ranking, rating, etc. Such lists are commonly used to form image profiles (see further #3.2.10).

(4) Choice: Respondents are presented with a number of stimuli and asked for their first choice. This method has many disadvantages, e.g. only top rankings are considered, and stimuli that never receive a first choice cannot be scaled.

(5) Paired comparisons: Each stimulus is paired with each other stimulus, and the respondent is asked to indicate which is preferred. The result is an ordinal scale in the form A>B>C etc.

(6) Trade-off analysis: Respondents are given a number of alternatives, and asked to suggest how they might be affected by changing variables such as different budget levels (Halperin 1981a, p.92-93).

(7) Direct methods: Direct questions are asked, and techniques such as interviews and open-ended questions are used.

(8) Indirect methods: Where respondents are unaware of their needs and motivations, or are unwilling to divulge them, indirect methods such as word association, sentence completion, picture completion, role playing must be used.

Since the proposed empirical study will be concerned with the

measurement of preferences and satisfaction, the rating and/or ranking of prespecified attributes will be the most appropriate data gathering technique to use. The direct judgement method will be used to assess the importance attached to information needs in these prespecified item lists. The items in these lists were gleaned from the literature and from previous questionnaires found in the literature (see #2.3).

3.2.6 QUESTIONNAIRE FORMAT:

The format of a questionnaire can strongly influence the response either by resulting in non-response or by causing errors in response. Sources of error in questionnaires have been discussed inter alia by Busha & Harter 1980, p.71-73; Hoinville & Jowell 1978, chapter 3; Leedy 1974, p.81-85; Line 1982, p.66-67. Some of the more common format sources of error are:

(1) Questionnaire objectives not clearly defined. Unless the objectives are clearly defined before the questionnaire is compiled, the resulting instrument will be poorly conceived and ill-prepared, and respondents cannot be expected to be able to understand it.

(2) Questionnaire not suited to the motivation and comprehension levels of the respondents. The relevance of the questionnaire instrument must be made clear to the prospective respondents, since logically one must expect a poor response to a questionnaire where the respondents are not motivated to reply. Similarly, if the questionnaire cannot be understood by the respondents because it is beyond their comprehension level by use of terminology and concepts outside of their knowledge, prospective respondents will either not reply at all or will provide inaccurate data.

(3) Questionnaire poorly constructed. The very framework or structure of a questionnaire can adversely affect the resonse. Some of the factors which can contribute to poor or inaccurate response are inadequate instructions on what is expected of the respondent, asking irrelevant or unnecessary questions, an unnecessarily complicated format, an unnecessarily long questionnaire, poor layout of the printed document.

In compiling the questionnaire for the proposed survey, careful attention will therefore be given to these points to ensure a good response to the questionnaire and the elicitation of reliable data. Careful attention will be given to the introduction which should explain the purpose and importance of the survey, explain the construction of the contents and how the questions should be answered. In addition, concepts which may not be clearly understood by the respondents will need to be explained. The layout of the questionnaire will be carefully considered to ensure that it reveals the logic of the contents, and that the questions can be answered as easily as possible.

3.2.7 QUESTION CONSTRUCTION:

Perhaps the greatest source of error in questionnaires lie in the questions themselves. In constructing questions, consideration needs to be given to the content of the question, and the wording of the question.

3.2.7.1 Question content:

Common sources of error which may arise from the content of questions are -

(1) Allowing multiple concepts in a single question. The respondent then does not know which concept requires a reply, or else the respondent

replies to a different concept to that which was in the mind of the compiler of the questionnaire.

(2) Allowing bias to creep into questions. In controversial areas, it is very easy for the viewpoint of the compiler of the questionnaire to be reflected in the question content, and this bias may well influence the way in which the question is answered.

Furthermore, the commonly made distinction between factual questions and opinion questions must be born in mind (see, inter alia, Moser & Kalton 1979, p.310-311, 315-318).

(1) Factual questions: "Factual" is an indication of the type of response expected, and does not necessarily guarantee that the response will actually be factual! The factual question is the most common type of question (other than in opinion surveys). The greatest difficulty with factual questions is to ensure that the respondent understands the question in the way intended (see #3.2.7.2).

(2) Opinion questions: Opinion questions are fraught with difficulties which include -

The respondent may not have an opinion, having never considered the matter

People's opinions are commonly many-sided and there is therefore no one correct answer

Intensity of opinion varies considerably from person to person

Opinion questions are particularly sensitive to aspects such as wording, emphasis and sequence.

Nevertheless, when dealing with user needs and user preferences, one cannot

avoid the opinions of users, and such opinion questions must therefore receive particular attention in their construction to avoid the pitfalls mentioned above.

Close attention will therefore be given to the content of questions in compiling the questionnaire for the proposed study so that the above problems will be avoided as far as possible.

3.2.7.2 Question wording:

The pitfalls of question wording have been widely discussed (e.g. Bookstein 1982, Moser & Kalton 1979, p.318-341), and include excessive verbiage in questions and poorly worded questions which result in ambiguity or even incomprehensibility. Belson (1981) in particular has proved scientifically that questions are frequently misunderstood or interpreted according to the respondent's own concepts. Belson (op. cit., p.389-390) warns against dangers such as:

(1) The strong tendency of respondents to answer questions in terms of what they usually do as distinct from what they did do

(2) The use of a qualifying clause, especially at the end of a question

(3) The tendency of respondents to start answering a question on the basis of what they think the question is about without reading/hearing it properly

(4) The very strong tendency of respondents to narrow down broad concepts, especially vague concepts

(5) The tendency of respondents to apply their own qualifications to a question

(6) The strong influence of the question's context on its

interpretation

(7) The distortion of the meaning of common terms such as "you", "regularly", "proportion", "usually"

With regard to the last point, Bookstein (1982) examined frequent misunderstandings of terms used in library surveys. For example, does "use of a library" include returning a book?, is a book "used" if it is found not useful? Adverbs of frequency such as "often" or "sometimes" are open to a wide range of interpretation.

Moser & Kalton (1979, p.318-331, 340-341) cover various aspects of question wording, including:

(1) Questions that are insufficiently specific

(2) The need for simple, clear language

(3) The need to avoid ambiguous questions and vague words

(4) Problems with leading questions, presuming questions, hypothetical questions, personalised questions, embarrassing questions

(5) Problems with terms of periodicity (e.g. "how often")

(6) Problems with questions involving memory

Belson's concluding advice (op.cit., p.389-390) is:

(1)Avoid loading questions with several different terms

(2) Avoid offering long alternatives as possible answers

(3) Avoid the use of words not usually used by the respondent

(4) Avoid giving the respondent a difficult task to perform

(5) Avoid requiring a major memory effort of the respondent

(6) Avoid offering alternatives which can both be true

Such advice will therefore be closely heeded in compiling the

questionnaire for the proposed study so that problems such as those discussed above will not arise.

3.2.7.3 Open-ended v. Pre-coded Questions:

Open-ended questions are useful in exploratory studies as they allow various dimensions and facets of a problem to be revealed. However, the unstructured results are often very difficult to analyse in anything more than a superficial way. (See, inter alia, Busha & Harter 1980, p.70; Moser & Kalton 1979, p.341-346).

Pre-coded questions, however, have their own problems, especially for the respondent. For example, the fixed responses may not allow for an unexpected response, which may lead to non-response or artificial response. On the other hand, the resulting data is easy to analyse.

The number of people involved in the proposed survey will be about 260 (see #3.2.4). This is a fairly large number for the use of open-ended questions and a considerable amount of work would be required to correlate the replies. For practical reasons, therefore, pre-coded questions will be used so that the resulting data will be manageable at the analysis stage.

3.2.8 QUESTION SEQUENCE:

Tull & Albaum (1973, p.145) provide the following general principles:

(1) A "funnel sequence" should be used, i.e. questions should be ordered from the general to the specific.

(2) Questions at the beginning should engage interest; difficult or threatening questions should be in the middle, while amplifying or ancillary information is gathered at the end.

(3) A series of questions is generally preferable to a single

broad question.

(4) Transitions between topics should be bridged by suitable comment or explanation written into the questionnaire.

Where appropriate, these principles will be applied in the design of the proposed questionnaire. In particular, the need to provide bridging explanations from one topic to the next will be given attention.

3.2.9 SCALING OF VARIABLE VALUES:

If a survey attempts to put a value to a variable, measurement is involved, which in turn presupposes that some form of scale is needed. Various scaling techniques may be used, and these are discussed (inter alia) by Tull & Albaum (1973, p.103-130) and Line (1982, p.61-64).

3.2.9.1 Scales of Measurement:

There are four types of scales or levels of measurement (Carpenter & Vasu 1978, p.2-6; Tull & Albaum 1973, p.82-87) -

(1) Nominal - each category is assigned a number which is merely a label; there is no empirical relationship among the numbered categories.

(2) Ordinal - ordering or ranking results in an ordinal scale on which categories are defined as "greater than", "equal to" or "less than" each other, but there is no determination of distance between positions on the scale. Ordinal scales are frequently used to measure preference opinions.

(3) Interval - an interval scale is an ordinal scale on which the intervals between successive positions are equal; it is a truly quantitative scale, but the origin or zero point of the scale is arbitrary and not natural. A typical example is the IQ scale. Interval scales are commonly

used in the behavioural sciences, but are rarely of use in user studies (Carpenter & Vasu 1978, p.4).

(4) Ratio - a ratio scale is an interval scale with a natural origin, or true zero point. Ratio scales are found most commonly in the natural sciences rather than the social sciences, although they can be used, for example, to compare libraries by size of budget or floor area.

Paisley (1968, p.3) criticised at least one survey for attempting to scale qualitative variables such as respondents' qualifications or discipline. Numerical values which will be assigned to aspects of the independent variables in the proposed survey should not be misunderstood as an attempt to scale such variables; numerical values assigned will rather be identifiers so that specific sub-populations can be identified and retrieved, i.e. such scales will be strictly nominal scales.

Under #3.2.5 it was determined that rating or ranking of prespecified attributes would be the most suitable approach for the proposed study, thus the level of measurement in such cases will be ordinal.

3.2.9.2 Number of Scale Positions:

There are two aspects to this consideration -

(1) Few or many positions? - Too many positions force respondents to make fine distinctions which have no validity, and conversely, too few positions may produce data which has little value in measuring attitude. In practice, scales commonly vary between 4 and 10 points, with 5-point scales being very common. The commonly used 5-point scale is considered to be appropriate for the purpose of the proposed survey.

(2) Odd or even number? - An odd number provides a midpoint for a neutral response, while an even number forces an indication of attitude one

way or the other but may also lead to a non-response. In the proposed study there will be no need to force an indication of attitudes for or against, so the more commonly found odd number scale will be used.

When using pre-coded questions (see #3.2.7.3) it is inevitable that fixed-alternative responses will arise which cannot be answered in certain circumstances, and provision for responses such as "not applicable" or "don't know" need to be made. It will therefore be necessary to provide for non-response in such a situation. Where possible, such non-response should be separate from the basic scale to avoid confusion; for example, the scale used by Murphy (1979, p.19) where 5 = good, 4 = satisfactory, 3 = unsatisfactory, 2 = don't know, 1 = indifferent, is likely to be confusing, since many respondents are likely to look at the scale superficially and take it as a 5-point scale, whereas it is in fact a 3-point scale with two provisions for non-response. It would have been better to have separated points 1 and 2 from the rating scale itself. In the proposed questionnaire, respondents will therefore be ask to leave the rating scale blank if they are unable to supply an answer. A brief explanatory note for non-response will be asked for to ensure that they have made a serious attempt to answer the question.

3.2.9.3 Scaling techniques:

There are two broad types of scaling techniques -

(1) Indirect placement scales - These include Likert and Thurston scales, which seek to place the respondent on a scale by the total score of the responses, i.e. what is of concern is the total score assigned to each respondent, rather than the individual items themselves.

(2) Rating scales - These require the respondent to rate a concept

(or person, object, etc.) along a continuum or in an ordered set of categories. They are easy to administer, simple to complete, and can be analysed quickly. They are subject, however, to the error of respondents carrying over a generalised impression from one response to the next.

For the purpose of the proposed survey where specific information needs and preferences require measurement, rating scales will be the most appropriate method of scaling. In most cases rating will be preferable to ranking where the latter may force a meaningless trade-off between closely similar concepts.

3.2.10 DATA ANALYSIS:

Any given set of data may be analysed statistically in a number of different ways, and it is necessary to give consideration to the correct methods for the intended purpose. This will depend upon -

(1) the type of data involved

(2) the specific questions being asked of the data

The type of data will determine whether one uses parametric or non-parametric tests. Parametric tests make certain assumptions, viz.

(1) all observations are independent of each other

(2) distribution of observations is normal (Gaussian)

(3) populations have the same standard deviation

(4) populations have the same mean

(5) the level of measurement is interval or ratio

Non-parametric tests do not assume a normal distribution, and can be used with nominal and ordinal data.

The questions one can ask of the data will depend on one's research intentions. In this respect statistical methods fall into essentially three

categories -

(1) Sample description, using tabular or graphic representations of the data, or descriptive parameters such as the mean or standard deviation.

(2) Hypothesis testing, such as testing the hypothesis that a suspected effect has occurred because of random variation.

(3) Estimation, such as the strength of relationship between variables, or prediction of values in relation to variation.

Some of the commonly used statistical techniques may be categorised as follows (see, for example, Carpenter & Vasu 1978, p.3; Leedy 1974, chapter 9; McNichols 1984, p.23-26):

	PARAMETRIC STATISTICS	NON-PARAMETRIC STATISTICS
SAMPLE DESCRIPTION		
Tabular	Frequency tables Percentage tables	Frequency tables Percentage tables
Graphic	Histograms Scatterplots	Histograms Scatterplots
Central tendency	Mean Median	Mode
Dispersion	Variance Standard deviation	Range
HYPOTHESIS TESTING		
Difference between means	t test	Mann-Whitney test Kruskal-Wallis test
Difference between variances	F test (ANOVA)	Chi-squared test
ESTIMATION		
Correlation	Pearson product-moment	Spearman rank-order
Regression	Linear regression Multiple regression	

In the proposed survey, most of the data will be gathered by use of rating scales (see #3.2.9.1) which are ordinal. Furthermore, certain sub-populations may be fairly small, and their parameters would therefore differ considerably from those of the population. For these reasons, nonparametric measures and tests should be applied to such data.

The data will be listed in FREQUENCY AND PERCENTAGE TABLES. Graphic presentation will include the use of pie charts, histograms, and of profiles (see below) linking weighted averages of the percentages of replies. These WEIGHED AVERAGES will be a measure of central tendency, and will be calculated as in the following example:

Ordinal scale points:	1	2	3	4	5
Percentage of replies:	5	10	20	50	15

Weighed average = ((1*5) + (2*10) + (3*20) + (4*50) + (5*15)) / 100

= 3.6

Similar item lists will be used to rate the opinions of respondents on the effectiveness of the Library from which an image perception of the Library can be deduced. In certain cases the item lists for the needs and for the ability of the Library to meet the needs will be identical, so that the two factors can be compared by profile techniques, the difference between the information need profile and the Library image profile thus giving an indication of effectiveness.

The PROFILE TECHNIQUE (see, for example, Kotler 1975, p.136; Likert 1967, chapter 3) is a convenient visual technique using line graphs. It is commonly used in the analysis of marketing research results, and is also used in other areas such as psychology (e.g. the Kuder Interest Inventory). Murphy used profiles in the form of histograms to illustrate the differences

between use by specific groups of users in the analysis of a study of library use at the US Air Force Academy (1979, p.22-24).

To test the null hypothesis that there is no relationship between any two sets of data the CHI-SQUARED TEST will be used. For example, a cross-tabulation of Language and Discipline may produce the following observed frequencies of reply:

	DISCIPLINE		
	Eng Sci	Life Sci	Human Sci
LANGUAGE			
English	45	19	36
Afrikaans	30	25	51

The expected frequencies are calulated from these values by simple proportion, i.e.:

$$E(r,c) = R * C / n$$

where $E(r,c)$ = expected frequency of cell r,c

R = row total

C = column total

n = grand total, or, sum(R) = sum(C)

In the table below the values of E(r,c) are given in brackets:

	DISCIPLINE			
	Eng Sci	Life Sci	Human Sci	Row total
LANGUAGE				
English	45 (36.4)	19 (21.4)	36 (42.2)	100
Afrikaans	30 (38.6)	25 (22.6)	51 (44.8)	106
Column total	75	44	87	206

The observed frequencies are compared with the expected frequencies to give the chi-squared statistic which is calculated according to the following formula:

$X^2 = \text{sum}((O - E)^2 / E)$

where O = observed frequency for each cell

E = corresponding expected frequency

In the above example $X^2 = 6.235$. This is compared with standard tables of critical values of the chi-squared distribution which are listed according to the confidence level (commonly 0.05 or 5%), and the degrees of freedom (given by (r-1)*(c-1) where r = number of rows and c = number of columns). For a 5% confidence level and 2 degrees of freedom, the critical value of the chi-squared distribution is 5.991. Since the chi-squared statistic in the above example exceeds the critical value, the null hypothesis is rejected, i.e. the frequencies in a cross-tabulation of the two variables Language and Discipline are not random, and their relationship can be said to be significant.

3.3 EXECUTION OF THE SURVEY

In the previous section, consideration was given to the principles which were to be applied in the design of the survey and the survey instrument. A copy of the questionnaire used may be found in the Appendices (#6.2).

This section will describe the manner in which the survey was conducted, the response which it received, and the data processing procedures used.

3.3.1 PRE-TESTING:

The questionnaire was pre-tested for clarity and validity by being administered to a small pilot group of lecturers representative of the

population. The group consisted of 1 Lecturer, 3 Senior Lecturers and 2 Heads of Department. One of the Senior Lecturers was chosen for his experience in the use of questionnaires for marketing surveys. One of the Heads of Department was chosen because he was Head of the Department of Languages.

All offered valuable comments, and as a result, the wording of several questions was improved. It was also found that some respondents felt that they could not answer certain questions on library effectiveness as they had not used every aspect of the Library's service. Clearer instructions were therefore provided in the introduction for a non-response in such cases. A final section consisting of an exercise in trade-off analysis was abandoned altogether since all of the respondents in the pilot group found considerable difficulty with the section.

Section 3.1 in the questionnaire (on Library Goals) originally used a rating scale as with the majority of the other questions. In the pilot study most goals were given uniformly high scores, thus producing meaningless results, and a ranking of the goals was therefore requested in the final version of the questionnaire.

3.3.2 DISTRIBUTION:

The population was easily defined from a list of full time staff by Schools and Departments which is maintained by the Technikon's Staff Office. After excluding the Director of each School, the staff of the Bureau for Student Affairs, the staff of the Teaching Development Unit (see #3.2.3) and the lecturers who were involved in the pilot survey, the remaining lecturers represented the population which was used in the survey.

The questionnaires were made available in both English and Afrikaans, and they were distributed with a covering letter from the Rector which encouraged response to the questionnaire. The distribution took place at the beginning of the second semester of 1985, and three weeks were given for return. This proved to be a good time for distributing the questionnaire, as a number were returned within the first two days, i.e. before classes commenced.

3.3.3 FOLLOW UP:

From the replies received it became clear that the instructions for Section 3.1 (questions 65 - 69) were not clear, especially in the English version. Where necessary, questionnaires were therefore returned with a note explaining exactly what was required.

A week before the deadline for return, a note was sent to everyone who had not yet returned the questionnaire, reminding them of the deadline. Immediately after the deadline, a further note was sent to non-respondents, giving them a further half week for reply.

At this stage the response rate was still not entirely satisfactory, and the Library's Subject Librarians were requested to contact non-respondents personally, asking them to either answer the questionnaire or to provide a reason for their non-response.

3.3.4 RESPONSE TO THE QUESTIONNAIRE:

After making allowance for those who were excluded from the survey, for people who had left the Technikon, and for those who were on leave or ill, the final response was as follows:

School	Possible No of Replies	Actual No of Replies	Percentage Response
Architecture & Building	9	6	67
Accounting	28	18	64
Art & Design	20	14	70
Civil Engineering	22	17	77
Electrical Engineering	19	19	100
Food & Clothing Technology	18	15	83
Languages & Communication	7	6	86
Management	19	17	89
Mechanical Engineering	19	13	68
Paramedical & Biological Sciences	37	31	84
Pharmacy	8	8	100
Physical Sciences & Mathematics	23	20	87
Secretarial Studies	18	13	72
Teacher Training, Commerce	8	8	100
Total	255	205	80

A total response rate of 80% may be regarded as satisfactory. Thus, Dillman (1978, p.51-52), for example, indicated that a response rate of 80 to 90% can be expected when using the interview technique, but that lower response rates must be expected with mailed questionnaires. He suggested that general public surveys using lengthy questionnaires might achieve a response rate of 60 to 75%.

3.3.5 NON-RESPONSE TO THE QUESTIONNAIRE:

The problem of missing members of the population through non-response can be a source of error (see, for example, Bookstein 1974, p.127-129) as their non-response may represent a characteristic which would be distorted in the analysis of the data by the absence of their replies.

Consideration was therefore given to the 20% who did not reply to the questionnaire. It was found that among the non-respondents were -

(1) Those whose responses were received too late to be included

(2) Those whose responses were too sketchy to be usable

(3) Those who claimed to have replied already (some replies appear to have gone astray)

(4) Those who after several reminders said they would reply but still did not

(5) Those who could not be contacted personally by the Subject Librarians

(6) Those who declined to reply on the grounds of an aversion to questionnaires

(7) Those who declined to reply on the grounds of lack of time

(8) Those who declined to reply on the grounds of having been at the Technikon for a very short period

The reasons for non-response were clearly very diverse, and do not appear to reflect any important characteristic which would cause error in the analysis.

Since the non-response was at an acceptably low level, and since reasons for non-response would appear to be of such a nature as not to bias the results, the final response may be regarded as representative of the population as a whole.

3.3.6 DATA PROCESSING:

As the questionnaires were returned, the raw data was captured using the MicroPro data capture program Datastar.

The problem of non-response to specific questions was handled as follows. Non-response to the independent variables (Section 1, questions 2 - 8) was not accepted since responses to these questions formed the foundation for the segmentation of the population. Where necessary,

incomplete information was elicited from the respondent or from the Director of the School concerned, but a small number of cases were rejected because of incomplete anonymous response.

In Section 2 (questions 9 - 64) on information needs, as indicated in the instructions at the beginning of the Section, potential need rather than actual use was being measured. Non-response was therefore understood to be equivalent to "1 Not important", i.e. a need which was considered to be irrelevant (and therefore no response given) may be considered to be potentially not important to the respondent.

With the dependent variables on library effectiveness (Section 3, questions 65 - 108), non-response was expected (see #3.3.1), as, in a number of cases respondents had no experience of the Library's ability to supply certain services. Such non-response was therefore coded separately as "0" attached to the 5-point scales and such non-response will be taken into consideration in the analysis of the results.

To reduce the raw data to tables of frequencies and percentages, and for the chi-squared test, programs were written in CBASIC. Copies of these programs may be found in the Appendices (#6.4 and #6.5). Graphic representation of the data (pie charts, histograms and line graphs for the profiles) was produced with the Digital Research graphics application program DR Graph.

4. A SURVEY OF USER NEEDS : DATA ANALYSIS

In this chapter is an analysis of the data collected in the survey referred to in the previous chapter. There were 107 variables and 206 usable responses which therefore yielded 22042 data bits. These were reduced to frequencies, percentages of replies and weighed averages. The 8 independent variables resulted in there being 22 tables (which may be found at the end of this volume), containing a total of 14124 frequency data bits and 14124 percentage data bits. A copy of the questionnaire and a summary of the variables will be found in the Appendices (#6.2 and #6.3).

From the high volume of data, it is clear that time and space do not allow a detailed statistical analysis of the results. Analysis will therefore concentrate on indicating the trends in the data by discussing the frequencies, percentages and weighted averages and using various graphic techniques such as histograms, pie charts and profiles (line graphs) to illustrate these trends. It should be noted that in the profiles and histograms (Figures 4.2 to 4.10 and 4.12 to 4.16), the figures along the abscissa (horizontal axis) represent the numbers of the variables (see the sumary of the variables in #6.2), while the 1 to 5 scale along the ordinate (vertical axis) represents the weighted averages of the replies to each variable (see #3.2.10).

In #3.2.4 it was concluded that the minimum sample size required would be 32. This limit was not reached in the following cases -

Data Table 9 : Respondents by Rank : Head of Department 30

Data Table 12 : Respondents by Qualification : M+5 vertical 31

Data Table 13 : Respondents by Qualification : M+6 vertical 1

Data Table 20 : Respondents by Professional Life-cycle : Phase 3 20

The sample size in Data Tables 9 and 12 are near enough to the limit to be acceptable; Data Table 20 is included in the analysis with the reservation that the sample size is on the low side; Data Table 13 is rejected as the sample size is clearly inadequate.

4.1 CHARACTERISTICS OF THE POPULATION

4.1.1 CHARACTERISTICS OF THE POPULATION AS A WHOLE:

(Variables 2 - 8, Data Table 1, Figures 4.1a and 4.1b)

4.1.1.1 Language of Reply:

Since the questionnaire document was issued in English and Afrikaans, it was possible to provide for Variable no. 2 as the language used in replying to the questionnaire. The respondents were almost equally divided in the language of reply, viz. 49% in English and 51% in Afrikaans. It was observed, however, that there were a few who replied in English who would have been expected to reply in Afrikaans, so that the ratio 49:51 is not necessarily a true reflection of home language background.

4.1.1.2 Discipline:

Variable no. 3 represents the discipline in which each respondent was working. It was assessed on the basis of the responses to Questions 1.2 to 1.4 according to the three disciplines decided upon at the end of #2.3.2.2.

The respondents were divided as follows -

Engineering Sciences	36%
Life Sciences	21%
Human Sciences	42%

The low percentage of respondents in the life sciences came as a surprise, since from prior observation it can be said that these lecturers generate a high proportion of library use both by themselves and by their students.

4.1.1.3 Rank:

Variable no.4 represents the rank of the respondents, and they were divided as follows -

Lecturer	59%
Senior Lecturer	27%
Head of Department	15%

These proportions represent a typical "pyramid" staffing structure.

4.1.1.4 Qualifications:

The 5th Variable required an assessment of the respondent's qualifications in terms of the scheme used in the technikons which was described at the end of #2.3.2.4. The respondents were divided as follows:

M+3 vertical	50%
M+4 vertical	34%
M+5 vertical	15%

As indicated in the introduction to this chapter (#4), only one respondent had an M+6 qualification, although at least one other potential

respondent was known to have such a qualification. This spread of qualifications would appear to be typical of technikons in their present state of development, and highlights one of a number of differences from universities where there is a strong emphasis on research level qualifications.

4.1.1.5 Teaching Experience:

The questions related to Variables nos 6 and 7 called for the length of teaching experience (a) altogether, and (b) in their current main subject. The respondents were divided as follows:

Total	
0-5 years	37%
6-10 years	26%
11+ years	37%

Current Subject	
0-5 years	52%
6-10 years	26%
11+ years	21%

There was a fairly even spread as far as total teaching experience was concerned, but the 52% for 0-5 years experience in their current subject suggests that a considerable proportion of lecturers were involved in fairly recent changes in their main subject. As indicated under #1.1.2 and #2.3.2.6, this is a characteristic of technikon practice.

4.1.1.6 Professional Life-cycle:

Variable no. 8 recorded the stage in the professional life-cycle which the respondent had reached. As discussed at the end of #2.3.2.6, Phase 1 represented initial exploration of a subject and/or preparation of new lecture notes, Phase 2 represented stabilisation in the teaching of the subject, while Phase 3 represented extension into research in the subject. The respondents were divided as follows:

Phase 1	33%
Phase 2	58%
Phase 3	10%

Only 10% claimed to be primarily involved in research or curriculum development, reflecting a very low level of formal research in the Cape Technikon. The fact that a third of the lecturers were involved in the preparation of new lecture notes confirms the observation above that they have been involved in fairly recent changes of subject.

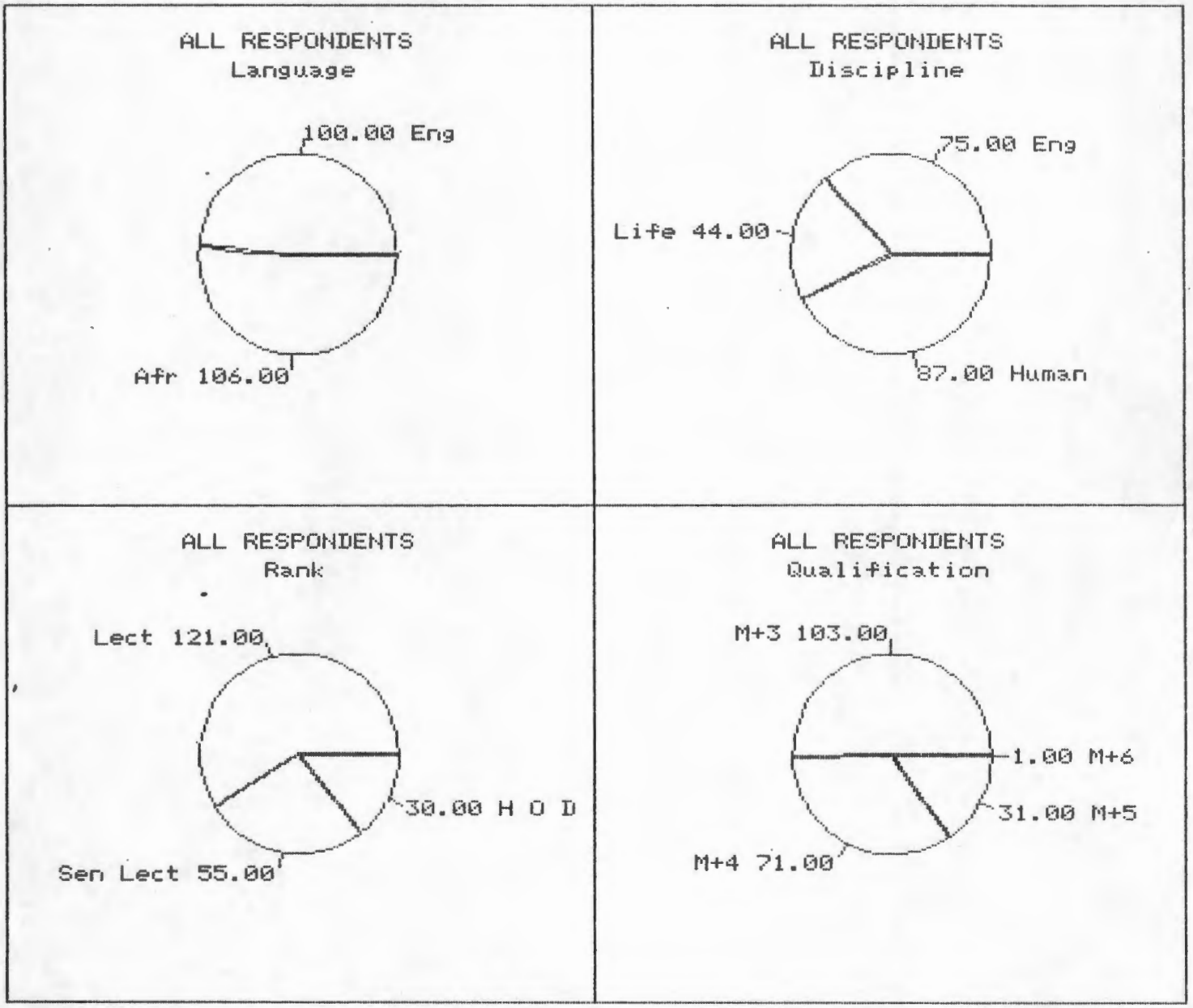

ALL RESPONDENTS
Language
100.00 Eng
Afr 106.00
ALL RESPONDENTS
Discipline
75.00 Eng
Life 44.00
87.00 Human
ALL RESPONDENTS
Rank
Lect 121.00
30.00 H O D
Sen Lect 55.00
ALL RESPONDENTS
Qualification
M+3 103.00
1.00 M+6
31.00 M+5
M+4 71.00

Figure 4.1a

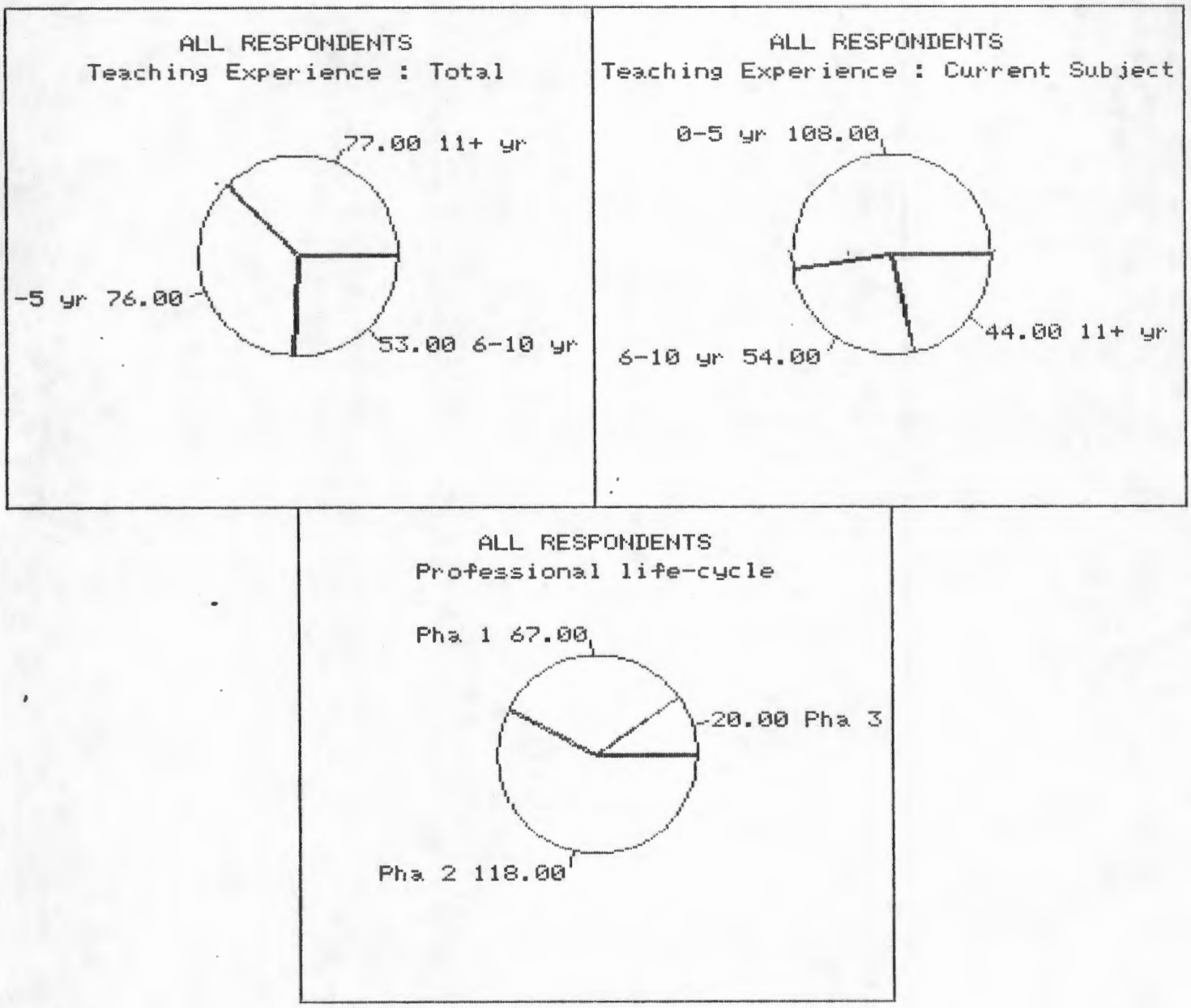

ALL RESPONDENTS
Teaching Experience : Total
77.00 11+ yr
-5 yr 76.00
53.00 6-10 yr
ALL RESPONDENTS
Teaching Experience : Current Subject
0-5 yr 108.00
44.00 11+ yr
6-10 yr 54.00
ALL RESPONDENTS
Professional life-cycle
Pha 1 67.00
20.00 Pha 3
Pha 2 118.00

Figure 4.1b

4.1.2 A CROSS-TABULATION OF THE INDEPENDENT VARIABLES:

(Variables 2 - 8, Data Tables 1 - 22)

A cross-tabulation of the independent variables was performed to determine the extent of influence of one variable upon another. The chi-squared test was used to assess these cross-tabulations, and it indicated that there was statistical significance in a cross-tabulation of the following independent variables:

Language / Discipline

Language / Qualification

Discipline / Qualification

Discipline / Total Teaching Experience

Discipline / Professional Life-cycle

Rank / Total Teaching Experience

Rank / Current Teaching Experience

Total Teaching Experience / Current Teaching Experience

Total Teaching Experience / Professional Life-cycle

Current Teaching Experience / Professional Life-cycle

The relationship between these independent variables will now be considered below.

4.1.2.1 Language / Discipline:

Language / Discipline

English
- 45% were in Engineering Sciences
- 19% were in Life Sciences
- 36% were in Human Sciences

Afrikaans
- 28% were in Enginnering Sciences
- 24% were in Life Sciences
- 48% were in Human Sciences

Discipline / Language

Engineering Sciences
- 60% were English
- 40% were Afrikaans

Life Sciences
- 43% were English
- 57% were Afrikaans

Human Sciences
- 41% were English
- 59% were Afrikaans

These proportions suggest that English speaking lecturers were predominantly in the Engineering Sciences, while Afrikaans speaking lecturers were predominantly in the Human Sciences.

4.1.2.2 Language / Qualification:

Language / Qualification

English	- 56% had M+3
	- 34% had M+4
	- 9% had M+5
Afrikaans	- 44% had M+3
	- 35% had M+4
	- 21% had M+5

Qualification / Language

M+3 vertical	- 54% were English
	- 46% were Afrikaans
M+4 vertical	- 48% were English
	- 52% were Afrikaans
M+5 vertical	- 29% were English
	- 71% were Afrikaans

These proportions suggest that Afrikaans speaking lecturers tended to be more highly qualified than English speaking lecturers, especially at the M+5 level.

4.1.2.3 Discipline / Qualification:

Discipline / Qualification

Engineering Sciences	- 61% had M+3 vertical - 32% had M+4 vertical - 7% had M+5 vertical
Life Sciences	- 39% had M+3 vertical - 30% had M+4 vertical - 30% had M+5 vertical
Human Sciences	- 46% had M+3 vertical - 39% had M+4 vertical - 15% had M+5 vertical

Qualification / Discipline

M+3 vertical	- 45% were in Engineering Sciences - 17% were in Life Sciences - 39% were in Human Sciences
M+4 vertical	- 34% were in Engineering Sciences - 18% were in Life Sciences - 48% were in Human Sciences
M+5 vertical	- 16% were in Engineering Sciences - 42% were in Life Sciences - 42% were in Human Sciences

If one accepts that an M+4 vertical qualification is becoming accepted as a minimum in a professional / academic situation, a significant advance in qualification is therefore the M+5 level (see #2.3.2.4). The above figures suggest that the Life Sciences had the greatest proportion of highly qualified lecturers; 42% of M+5 qualifications were to be found among them, yet they formed the smallest discipline in the Technikon. The Engineering Sciences had an exceptionally low proportion (only 7%) with an M+5 qualification. In the Human Sciences there was a fair spread of qualifications.

4.1.2.4 Discipline / Total Teaching Experience:

Discipline / Total Teaching Experience

Engineering Sciences	- 28% had 0-5 years - 23% had 6-10 years - 49% had 11+ years
Life Sciences	- 59% had 0-5 years - 20% had 6-10 years - 20% had 11+ years
Human Sciences	- 33% had 0-5 years - 31% had 6-10 years - 36% had 11+ years

Total Teaching Experience / Discipline

0-5 years	- 28% were in Engineering Sciences - 34% were in Life Sciences - 38% were in Human Sciences
6-10 years	- 32% were in Engineering Sciences - 17% were in Life Sciences - 51% were in Human Sciences
11+ years	- 48% were in Engineering Sciences - 12% were in Life Sciences - 40% were in Human Sciences

Those with minimal teaching experience were scattered fairly evenly over the disciplines. The spread of experience in the Human Sciences was fairly even, but almost half of the lecturers in the Engineering Sciences had over 10 years' teaching experience, while no less than 59% of the lecturers in the Life Sciences had less than 6 years teaching experience.

4.1.2.5 Discipline / Professional Life-cycle:

Discipline / Professional Life-cycle

Engineering Sciences	- 25% were in phase 1 - 75% were in phase 2 - 0% were in phase 3
Life Sciences	- 27% were in phase 1 - 55% were in phase 2 - 18% were in phase 3
Human Sciences	- 41% were in phase 1 - 45% were in phase 2 - 14% were in phase 3

Professional Life-cycle / Discipline

Phase 1	- 28% were in Engineering Sciences - 18% were in Life Sciences - 54% were in Human Sciences
Phase 2	- 47% were in Engineering Sciences - 19% were in Life Sciences - 33% were in Human Sciences
Phase 3	- 0% were in Engineering Sciences - 40% were in Life Sciences - 60% were in Human Sciences

Note that in #4.1.2.8 the validity of the professional life-cycle concept is questioned.

In all three disciplines, the greatest proportion of lecturers were in phase 2. The low proportion of Life Science lecturers in phase 1 was surprising in relation to their inexperience (see above), but can probably be related to their greater tendency to hold higher qualifications. The total absence of formal research in the Engineering Sciences is also surprising, since it is known from conversation that informal and personal research is taking place in this discipline.

4.1.2.6 Rank / Teaching Experience:

Rank / Teaching Experience

		Total	Current
Lecturer	- 0-5 years	54%	69%
	- 6-10 years	21%	18%
	- 11+ years	25%	13%
Senior Lecturer	- 0-5 years	18%	33%
	- 6-10 years	31%	38%
	- 11+ years	51%	29%
Head of Department	- 0-5 years	3%	23%
	- 6-10 years	33%	37%
	- 11+ years	63%	40%

These proportions are consisent with the expectation that increasing rank would tend to correlate positively with increasing experience.

4.1.2.7 Total Teaching Experience / Current Teaching Experience:

Note that only significant cross-tabulations are listed below; all other cases are logically either 100% or 0%.

Total Teaching Experience / Current Teaching Experience

6-10 years total	- 32% had 0-5 years current
	- 68% had 6-10 years current
11+ years total	- 19% had 0-5 years current
	- 23% had 6-10 years current
	- 57% had 11+ years current

Current Teaching Experience / Total Teaching Experience

0-5 years current	- 70% had 0-5 years total
	- 16% had 6-10 years total
	- 14% had 11+ years total
6-10 years current	- 67% had 6-10 years total
	- 33% had 11+ years total

These proportions reflect the frequency with which lecturers at the Cape Technikon are expected to tackle new subjects. No less than a third of

lecturers with 6-10 years teaching experience had only 0-5 years teaching experience in their current subject. 19% of highly experienced lecturers (11+ years) were having to teach new subjects in which they had only 0-5 years experience. 30% of those with only 0-5 years experience in their current subject were experienced lecturers of 6+ years. These figures clearly indicate that many experienced lecturers were recently involved in a change to a new subject, i.e. despite their total teaching experience, they can be expected to show many information needs similar to comparatively inexperienced lecturers as they explore their new subject and prepare new lecture notes.

4.1.2.8 Professional Life-cycle / Teaching Experience:

Professional Life-cycle / Teaching Experience

		Total	Current
Phase 1	- 0-5 years	49%	72%
	- 6-10 years	25%	21%
	- 11+ years	25%	7%
Phase 2	- 0-5 years	31%	42%
	- 6-10 years	24%	30%
	- 11+ years	46%	29%
Phase 3	- 0-5 years	35%	55%
	- 6-10 years	40%	20%
	- 11+ years	25%	25%

As indicated in the introduction to this chapter, Phase 3 was represented by only 20 respondents, so the significance of the figures for this phase must be treated with caution.

While the chi-squared test indicated a statistical significance in these cross-tabulations, an examination of the figures does not reflect the expected proportions inherent in the concept of the professional life-cycle (see also the data under #4.1.2.5). There were some startling anomalies,

for example, a quarter of lecturers with long teaching experience claim to be in phase 1 (preparation of new lecture notes); 35% of lecturers with less than 6 years experience claim to be in phase 3 (research or curriculum development). One can therefore conclude:

(1) the question on professional life-cycle was faulty,

or (2) the concept is inadequately developed or ill-defined or invalid,

or (3) the professional life-cycle is being overridden by other factors.

The last possibility is the most likely, since, as has been indicated above, lecturers at the Cape Technikon are engaged in minimal formal research, and are frequently expected to teach new subjects. These factors would tend to under-emphasise phase 3 and to over-emphasise phase 1, a tendency which is reflected in the above figures.

4.1.3 CONCLUSIONS:

In summing up the characteristics of the population at the Cape Technikon, it can be said that:

Those in the Engineering Sciences tended to be English speaking, had long teaching experience, not to have advanced qualifications, and not to be engaged in formal research.

Lecturers in the Life Sciences constituted a small group, and tended to be inexperienced, but highly qualified.

Those in the Human Sciences tended to be Afrikaans speaking, and to have an average spread of qualifications and experience.

A considerable number of lecturers were engaged in the preparation of

new lecture notes, or had minimal teaching experience in their current subject.

Very few lecturers were engaged in formal research or curriculum development.

4.2 INFORMATION NEEDS

Note that the paragraph numbering in #4.2 corresponds directly to the numbering of of the sections in the questionnaire document (see #6.2), thus #4.2.1 corresponds to the questionnaire section #2.1.

4.2.1 CURRENT AWARENESS:

(Variables 9 - 16, Data Tables 2 - 22, Figures 4.2a and 4.2b)

The questions asked in this section related to the following current awareness needs -

Variable	
9	Attending conferences
10	Discussion with colleagues within TechniKon
11	Discussion with colleagues outside TechniKon
12	Scanning current journals
13	Scanning abstract/index journals
14	Reading review journals
15	Using computerised current awareness service
16	Using a library current awareness service

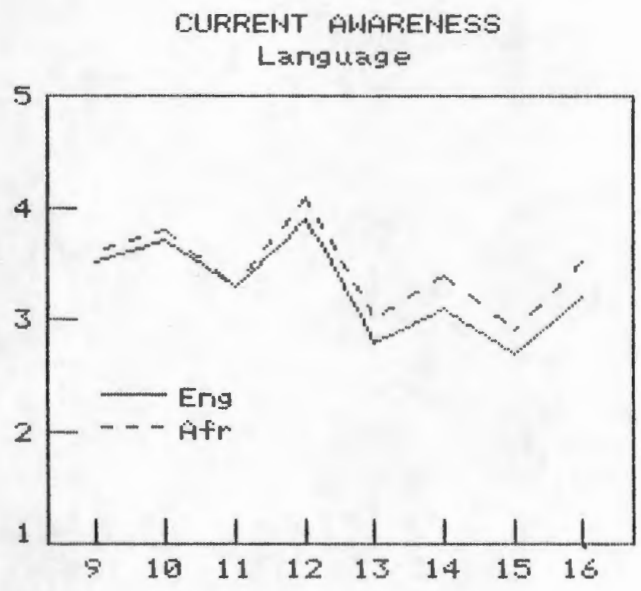
The need to attend conferences was uniformly rated well above average, except by those in the Engineering Sciences. Those in phase 3 of the professional life-cycle gave conference attendance a particularly high rating. The high value given to attending conferences is consistent with findings in other surveys, although the low value placed on them by engineers is an opposite trend and in contrast, for example, to the findings

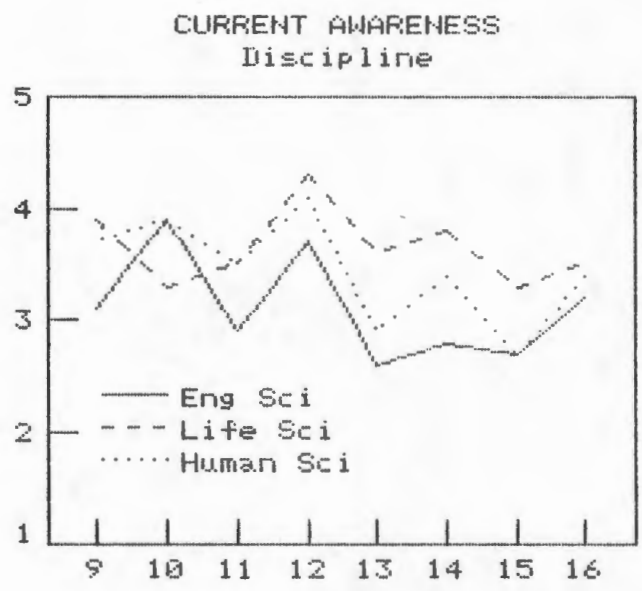
of Smith's survey (see #2.3.3.1).

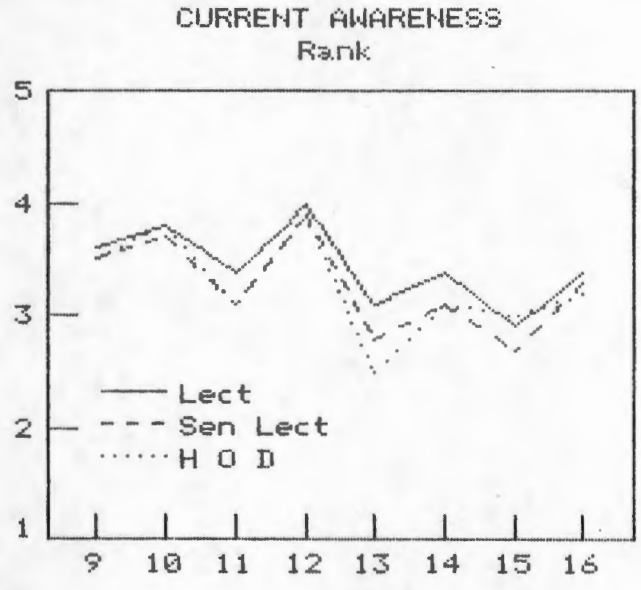
Discussion with colleagues within the Technikon was uniformly rated well above average, except that those in the Life Sciences, those with an M+5 qualification, and those with least experience tended to rate it lower. In general, discussion with colleagues outside the Technikon was rated lower (in the case of the Engineering Sciences, considerably lower), except in the case of respondents in the Life Sciences who regarded this as more important than discussion with their immediate colleagues. This use of a less accessible channel is unusual (compare #2.2.4.7). Apart from this, these findings agree with those of other surveys (see #2.3.3.1) where informal means of keeping up to date are also found to be very important.

Scanning current issues of journals was clearly regarded by most groups of respondents as the most important means of current awareness. Use of abstract or index journals, on the other hand was rated consistently low, except by those in the Life Sciences. Those ranked as lecturers and those with least experience rated abstract journals higher than their colleagues, suggesting a greater need for formal current awareness sources for those new to lecturing. This would correspond to findings in other surveys (see #2.3.3.3) that younger researchers rely heavily on formal channels as they have not had the opportunity to develop informal channels. The need for review journals was not particularly significant, except for those in the Life Sciences. A comparison of these results with those of other surveys (see #2.3.3.1) shows a high degree of consistency, with considerable importance being given to scanning current journals, and disappointing attention being given to abstracts and review articles. The Cape Technikon lecturers would appear to give even less attention to abstract journals than do academics elsewhere.

The need for computerised current awareness services was not given a particularly significant rating by most groups of respondents, other than those in the Life Sciences and those in phase 3 of the professional life-cycle. Library current awareness services were generally rated above average, but the rating was not as high as other sources such as discussion with colleagues or scanning current issues of journals. As indicated in #2.3.3.1 these services tend to be institution specific, and the value placed on them by users depends to a large extent on how well they are promoted. The above results are consistent with this assumption, as an online service was introduced only one month before the survey was conducted, but the Cape Technikon Library's Current Awareness Bulletin had been in existence for some time and is widely used.


CURRENT AWARENESS
Language
5
4
3
2
1
Eng
Afr
9 10 11 12 13 14 15 16


CURRENT AWARENESS
Discipline
5
4
3
2
1
Eng Sci
Life Sci
Human Sci
9 10 11 12 13 14 15 16


CURRENT AWARENESS
Rank
5
4
3
2
1
Lect
Sen Lect
H O D
9 10 11 12 13 14 15 16

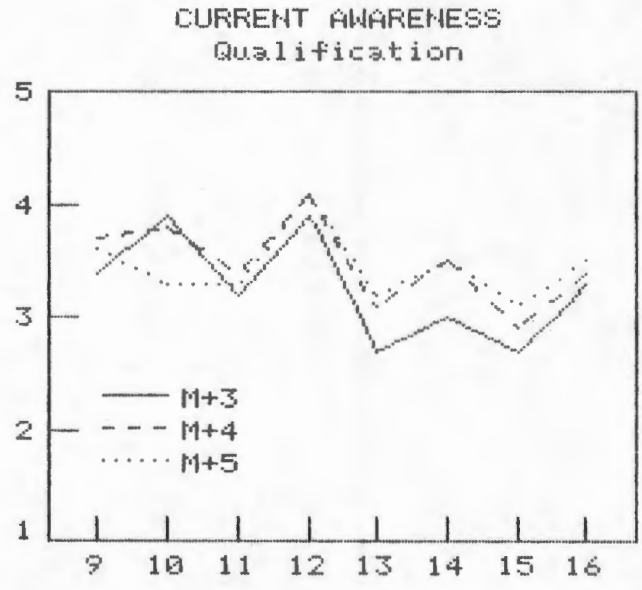
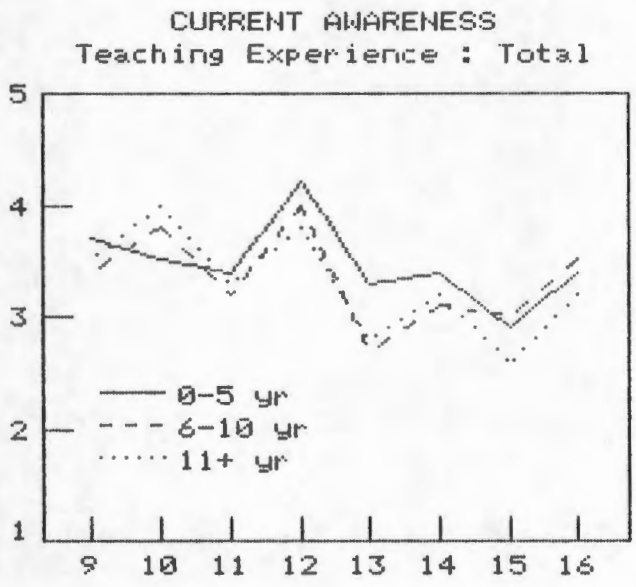
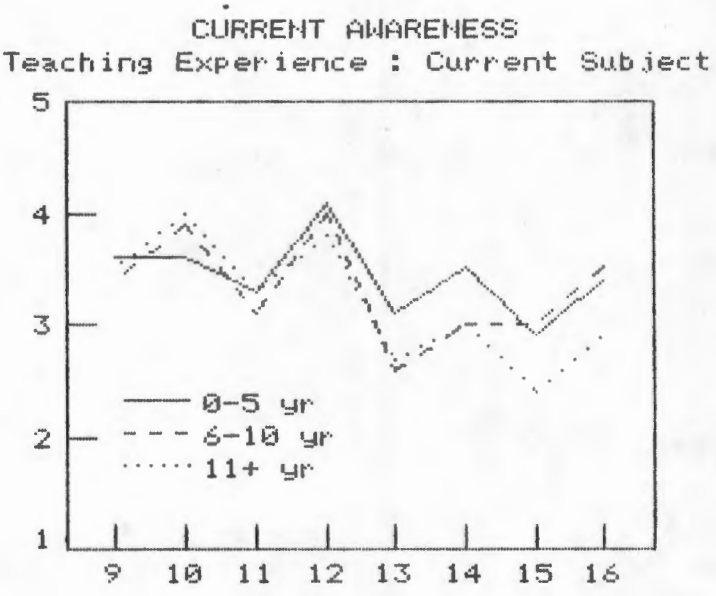

CURRENT AWARENESS
Qualification
5
4
3
2
1
M+3
M+4
M+5
9 10 11 12 13 14 15 16

Figure 4.2a


CURRENT AWARENESS
Teaching Experience : Total
5
4
3
2
1
0-5 yr
6-10 yr
11+ yr
9 10 11 12 13 14 15 16


CURRENT AWARENESS
Teaching Experience : Current Subject
5
4
3
2
1
0-5 yr
6-10 yr
11+ yr
9 10 11 12 13 14 15 16

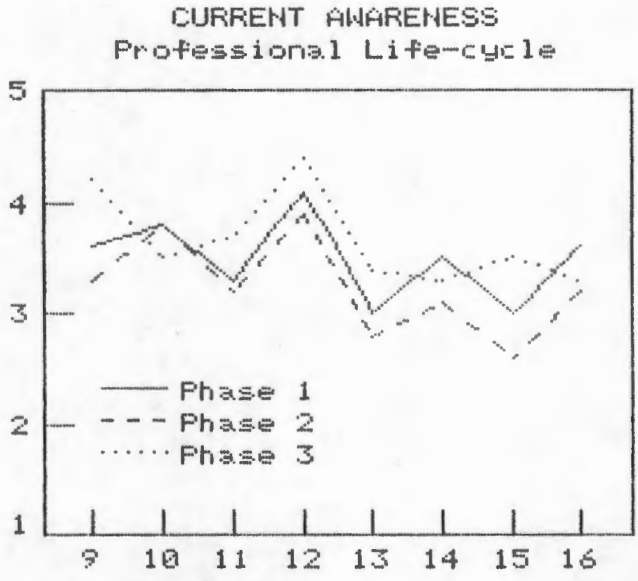

CURRENT AWARENESS
Professional Life-cycle
5
4
3
2
1
Phase 1
Phase 2
Phase 3
9 10 11 12 13 14 15 16

Figure 4.2b

4.2.2 PLACES WHERE INFORMATION IS FOUND:

(Variables 17 - 26, Data Tables 2 - 22, Figures 4.3a and 4.3b)

The questions asked in this section related to the following places as sources of information -

Variable	
17	Cape Technikon Library Services
18	Local university libraries
19	Local public libraries
20	Own personal library
21	Colleagues' personal libraries
22	Research institutes
23	Professional institutes
24	Trade associations
25	Industrial firms
26	Government departments

Finding information in the Cape Technikon's own Library was given a very high rating by all groups of respondents, thus confirming the common finding that the nearest information source is the one most likely to be used (see #2.2.4.7). This result is encouraging compared with some other surveys (see #2.3.3.2) which found that use of a user's institution library was low.

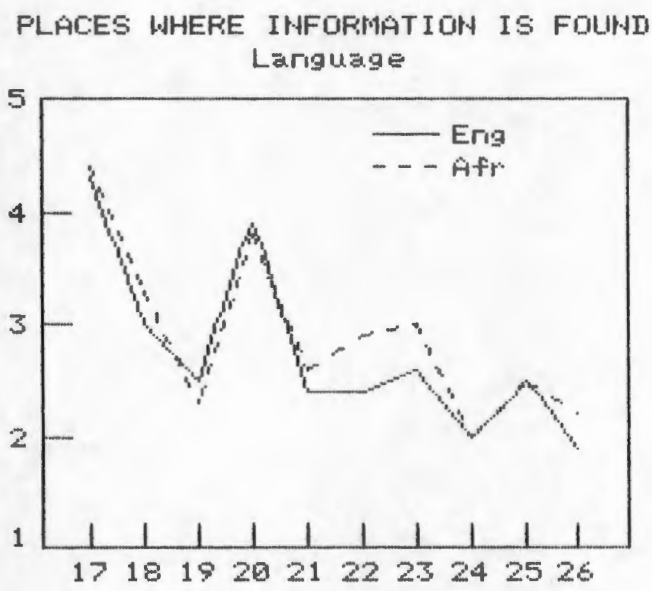
Local university libraries as a source of information were given only an average rating, which agrees with findings in other surveys (see #2.3.3.1). An exception was those in the Life Sciences, those with an M+5 qualification and those in phase 3 of the professional life-cycle where the importance of local university libraries was fairly high, which would suggest that university libraries are being used as sources of advanced information, particularly for research purposes, because the Technikon Library is inadequate for such purposes.

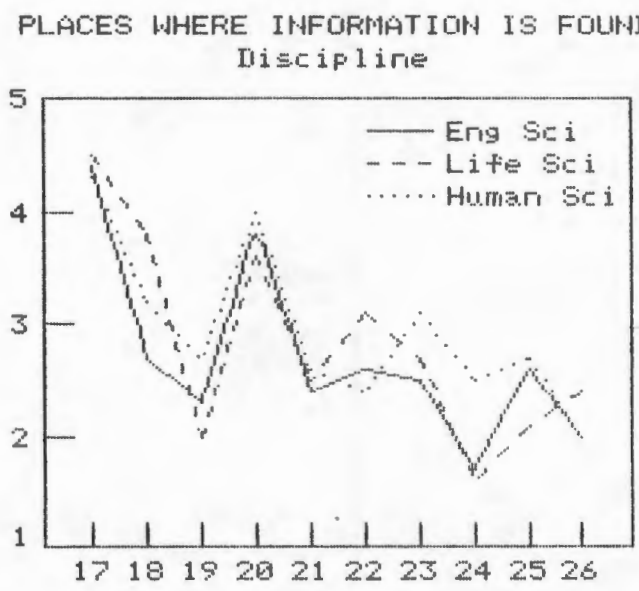
Local public libraries were consistently rated below average, the

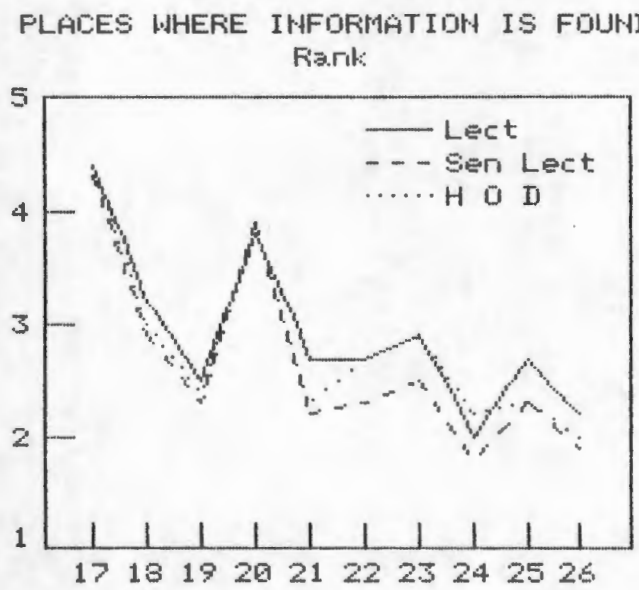
highest rating (2.7) coming from the Human Sciences; probably a natural reflection of the breadth of information required in this discipline. A tendency for engineers to use public libraries over other university libraries found in Smith's survey (see #2.3.3.2) was not found in this present survey.

Lecturers' own personal libraries were consistently given high ratings as the second most important source of information, a finding which is in line with those of other surveys (#2.3.3.1). This is encouraging as it has been observed that certain lecturers expect the Library to supply them with copies of prescribed works for lecture preparation. Colleagues' personal libraries were consistently given below average ratings.

The remaining sources were all given low ratings, mostly below average, in much the same way as has been found in other surveys (see #2.3.3.2). Research institutes were rated highest by those in the Life Sciences, while professional institutes were rated highest by those in the Human Sciences. Surprisingly low ratings were given to both research and professional institutes by English speaking respondents and by respondents in the Engineering Sciences. (One must remember that a high proportion of English speaking lecturers were in the Engineering Sciences - #4.1.2.1). Trade associations were given very low ratings, except by those in the Human Sciences, but this would be expected with the business subjects included in this discipline. Industrial firms were rated by those in the Human Sciences as high as by those in the Engineering Sciences. Government departments were given consistently low ratings.


PLACES WHERE INFORMATION IS FOUND
Language
Eng
Afr
5
4
3
2
1
17 18 19 20 21 22 23 24 25 26


PLACES WHERE INFORMATION IS FOUND
Discipline
Eng Sci
Life Sci
Human Sci
5
4
3
2
1
17 18 19 20 21 22 23 24 25 26


PLACES WHERE INFORMATION IS FOUND
Rank
Lect
Sen Lect
H O D
5
4
3
2
1
17 18 19 20 21 22 23 24 25 26

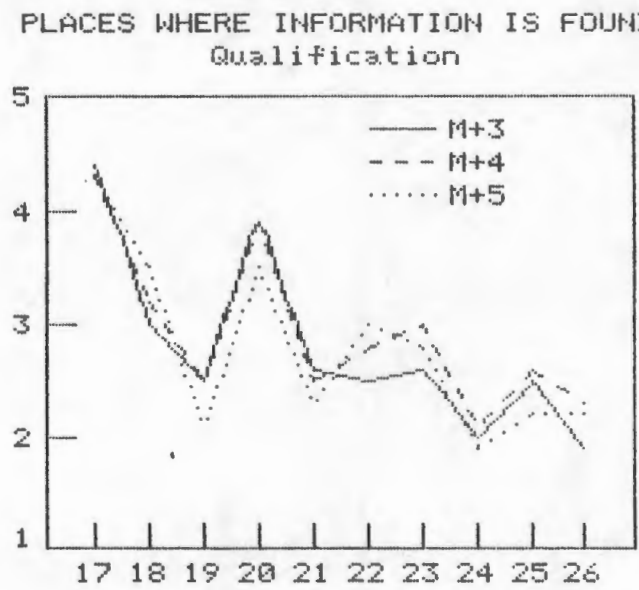
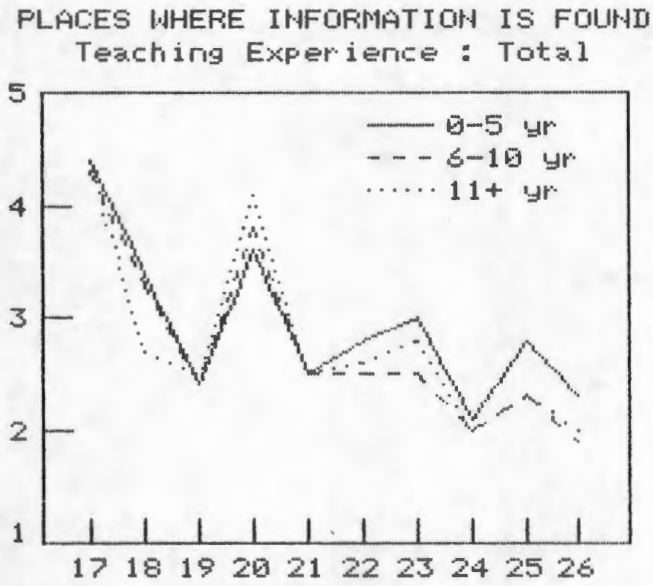
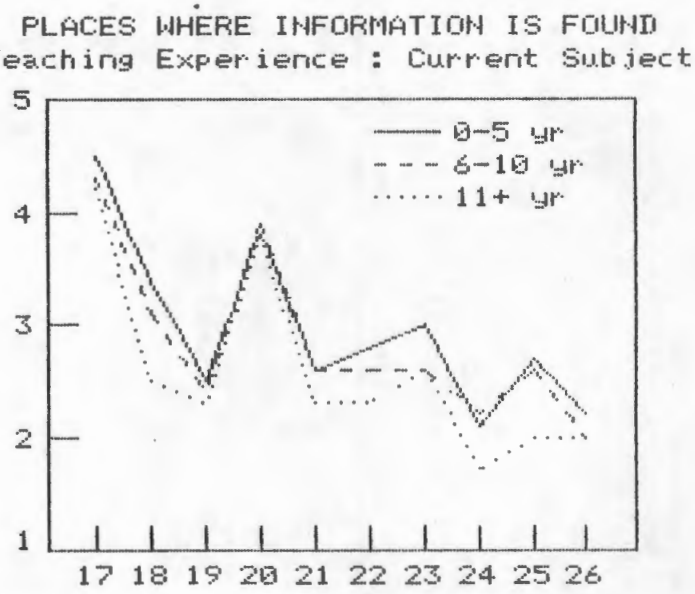

PLACES WHERE INFORMATION IS FOUND
Qualification
M+3
M+4
M+5
5
4
3
2
1
17 18 19 20 21 22 23 24 25 26

Figure 4.3a


PLACES WHERE INFORMATION IS FOUND
Teaching Experience : Total
0-5 yr
6-10 yr
11+ yr
5
4
3
2
1
17 18 19 20 21 22 23 24 25 26


PLACES WHERE INFORMATION IS FOUND
Teaching Experience : Current Subject
0-5 yr
6-10 yr
11+ yr
5
4
3
2
1
17 18 19 20 21 22 23 24 25 26

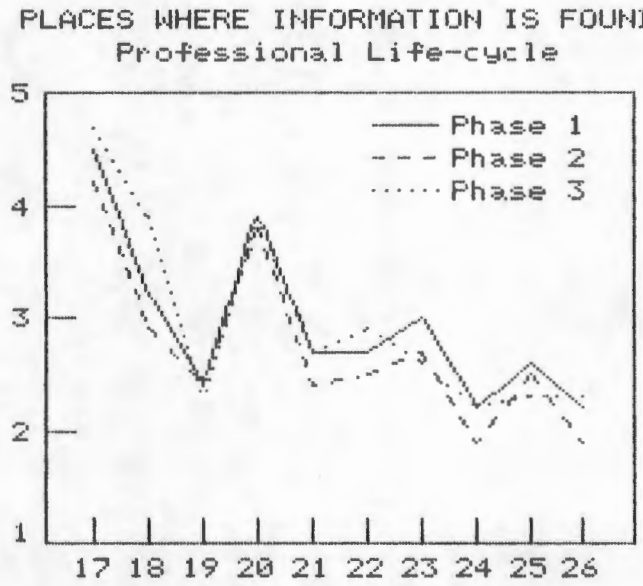

PLACES WHERE INFORMATION IS FOUND
Professional Life-cycle
Phase 1
Phase 2
Phase 3
5
4
3
2
1
17 18 19 20 21 22 23 24 25 26

Figure 4.3b

4.2.3 METHODS OF FINDING INFORMATION:

(Variables 27 - 34, Data Tables 2 - 22, Figures 4.4a and 4.4b)

The questions asked in this section related to the following methods of finding information -

Variable	
27	Consult colleagues in the TechniKon
28	Consult colleagues outside the TechniKon
29	Consult Subject Librarian
30	Use abstract/index journals or services
31	Search through books or journal articles
32	Systematic search in a library
33	Browse in a library
34	Serendipity

As with current awareness needs (#4.2.1), consultation with colleagues within the TechniKon was uniformly rated above average, except that those in the Life Sciences, those with with an M+5 qualification, and those with least experience tended to rate it lower. In general, consultation with colleagues outside the TechniKon was rated lower, except in the case of respondents from the Life Sciences and those in phase 3 of the professional life-cycle who regarded this as more important than discussion with their immediate colleagues. These findings agree with those of other surveys (see #2.3.3.3), where consultation with colleagues is generally highly rated. Smith's survey also found that university scientists preferred to consult with non-local colleagues, in spite of the fact that such a channel is less accessible than local colleagues.

Consulting a Subject Librarian was rated as above average (in some cases on a par with consulting a colleague in the TechniKon), but this method of finding information was rated significantly lower in the case of those in the Engineering sciences, those with an M+5 qualification, those with long experience in their current subject, and those in phase 2 of the

professional life-cycle. This confirms the value of subject specialisation among library staff, as many surveys have found (see #2.3.3.3) that consulting a librarian is not rated very high by users.

Use of abstract and index journals was not given a high rating, except by those in the Life Sciences and those with little experience. This pattern follows that already found for current awareness (#4.2.1), and also that found in other surveys (see #2.3.3.3). Previous surveys have suggested that applied fields such as engineering make far lower use of abstracts than do basic sciences and biomedical sciences, and this is further confirmed here.

Use of bibliographic sources such as books and journal articles was consistently rated at a high level as has been the case in many other surveys (see #2.3.3.3).

Systematic use of a library was also consistently rated at a high level, a most encouraging finding, seeing that so many surveys find that use of libraries is poorly rated (see #2.3.3.3). On the other hand, browsing was consistently rated low in contrast to Wood's findings (#2.3.3.3); while serendipity (finding information by chance) was given very low ratings.

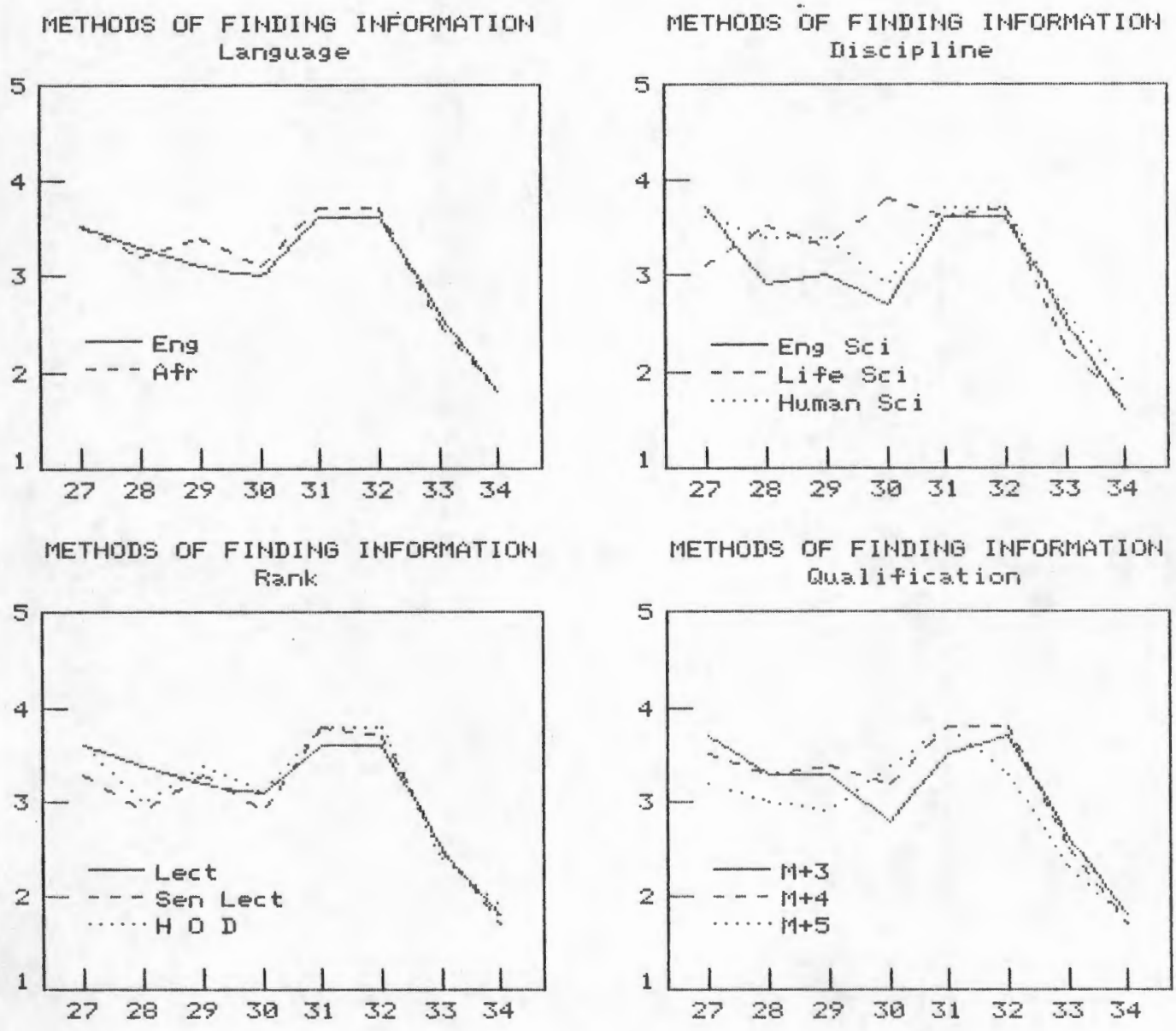
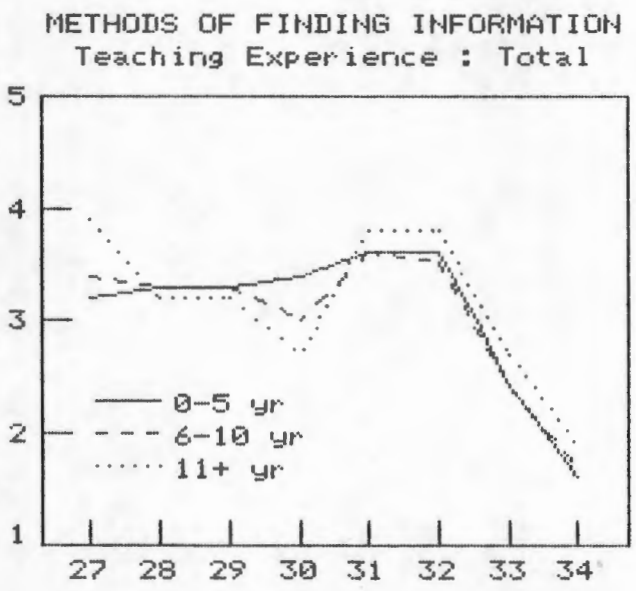
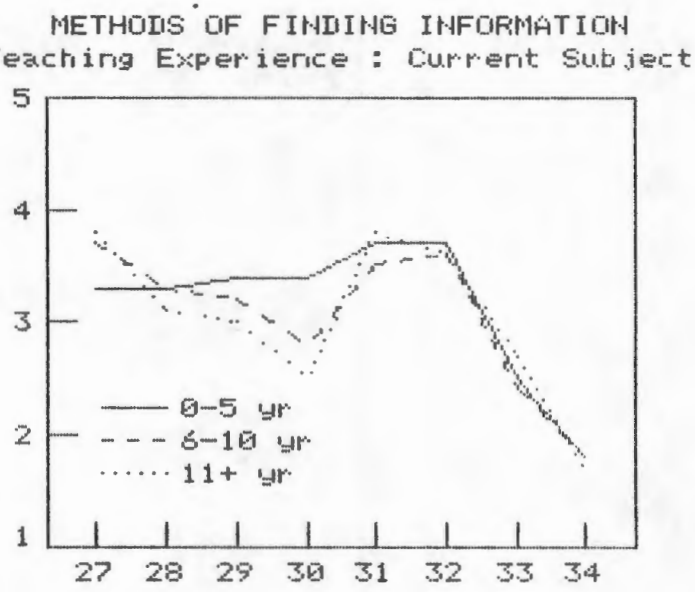

METHODS OF FINDING INFORMATION
Language
Eng
Afr
METHODS OF FINDING INFORMATION
Discipline
Eng Sci
Life Sci
Human Sci
METHODS OF FINDING INFORMATION
Rank
Lect
Sen Lect
H O D
METHODS OF FINDING INFORMATION
Qualification
M+3
M+4
M+5
1
2
3
4
5
27
28
29
30
31
32
33
34

Figure 4.4a


METHODS OF FINDING INFORMATION
Teaching Experience : Total
5
4
3
2
1
0-5 yr
6-10 yr
11+ yr
27 28 29 30 31 32 33 34


METHODS OF FINDING INFORMATION
Teaching Experience : Current Subject
5
4
3
2
1
0-5 yr
6-10 yr
11+ yr
27 28 29 30 31 32 33 34

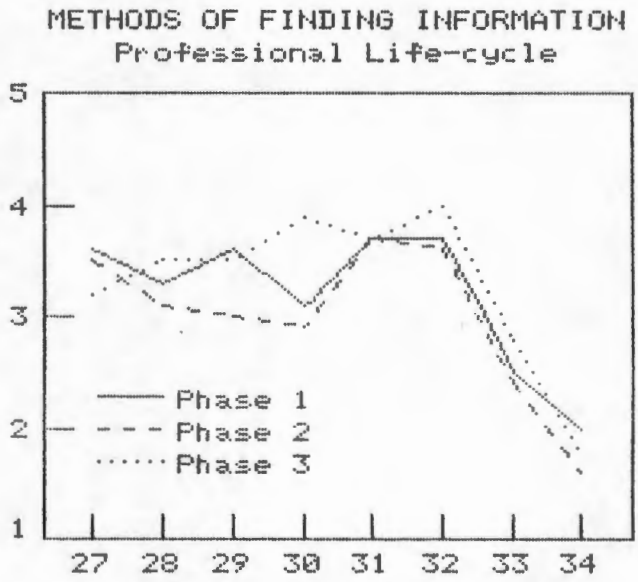

METHODS OF FINDING INFORMATION
Professional Life-cycle
5
4
3
2
1
Phase 1
Phase 2
Phase 3
27 28 29 30 31 32 33 34

Figure 4.4b

4.2.4 CITATION SOURCES:

(Variables 35 - 43, Data Tables 2 - 22, Figures 4.5a and 4.5b)

The questions asked in this section related to the following as sources for citations -

Variable	
35	Books, monographs
36	Journal articles
37	Published conference proceedings
38	Printed abstract/index journals
39	Computerised abstract/index services
40	Review journals
41	Library current awareness services
42	Bibliographies, literature surveys
43	Library catalogues

In considering the profiles for the need for various citation sources, it is significant that English respondents rated all sources except one lower than Afrikaans respondents, and that Engineering Science respondents rated all sources except one lower than the respondents in other disciplines. (one must remember that a high proportion of English speaking lecturers are in the Engineering Sciences - see #4.1.2.1). Increasing experience appeared to reduce the need for many citation sources.

In most cases books, journals and library catalogues were rated similarly as the main sources for citations. This corresponds to the findings of most surveys (see #2.3.3.4). Particularly high ratings were given to journals by respondents in the Life Sciences, those with an M+5 qualification and those in phase 3 of the professional life-cycle.

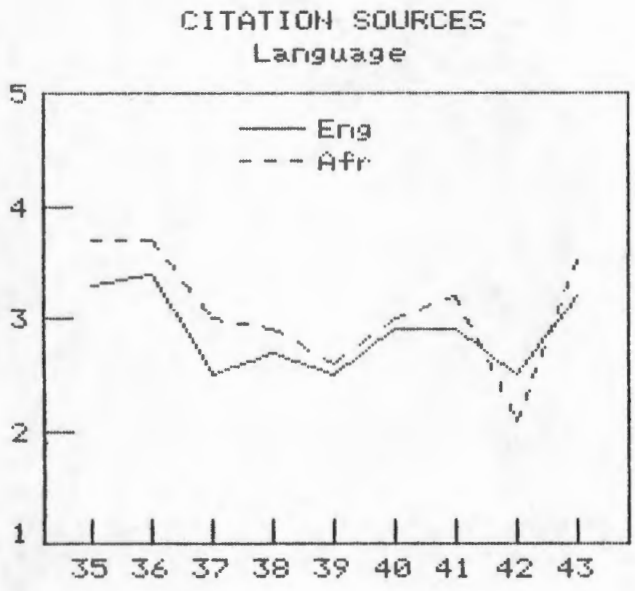
Computerised abstract services were usually rated lower than printed abstracts, possibly because of lack of exposure to them. An exception was the respondents in phase 3 of the professional life-cycle who clearly realised the potential advantages of a computerised abstract service for

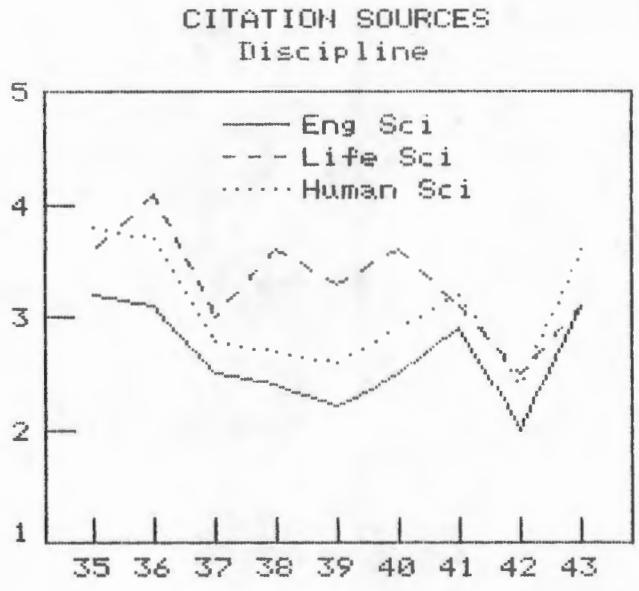
research purposes. In most cases printed abstract services as a source for citations were given only average ratings, well below those for books and journals; however, respondents in the Life Sciences gave them a high rating. Other surveys have shown similar trends with abstracts being regarded as far less important than cited references in books and journals (see #2.3.3.4). However, contrary to the usual findings, respondents in the Human Sciences rated these services higher than did those in the Engineering Sciences.

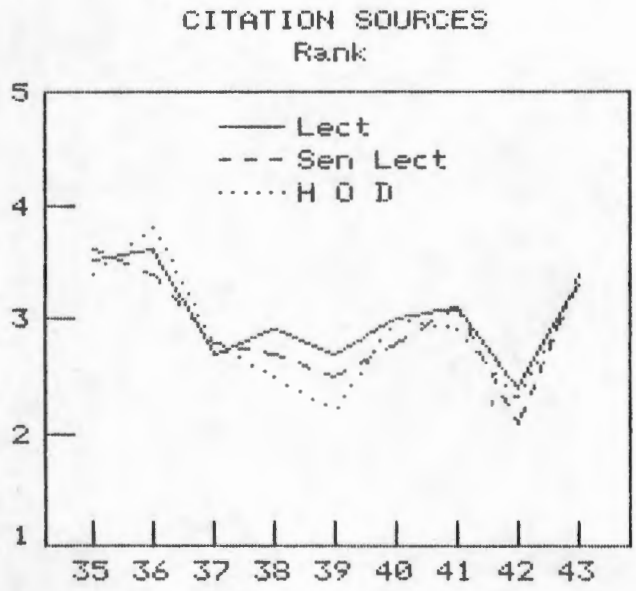
Conference proceedings were given average or below average ratinings in all cases. Review journals were given average or below average ratings by all except those in the Life Sciences. Bibliographies and literature surveys were consistently rated very low. As indicated in #2.3.3.4, those in the Humanities usually make greater use of bibliographies and literature surveys because of the lack of abstract services; but this present survey did not reveal a similar trend.

Library current awareness services were given average ratings by all groups, but those with long experience in their current subject rated them significantly lower than did their colleagues with less experience.

Library catalogues were generally rated as average or above average, in many cases at a similar level to books and journals. This is a very encouraging finding, as so many other surveys find that library catalogues are poorly utilised (see #2.3.3.4).


CITATION SOURCES
Language
Eng
Afr
5
4
3
2
1
35 36 37 38 39 40 41 42 43


CITATION SOURCES
Discipline
Eng Sci
Life Sci
Human Sci
5
4
3
2
1
35 36 37 38 39 40 41 42 43


CITATION SOURCES
Rank
Lect
Sen Lect
H O D
5
4
3
2
1
35 36 37 38 39 40 41 42 43

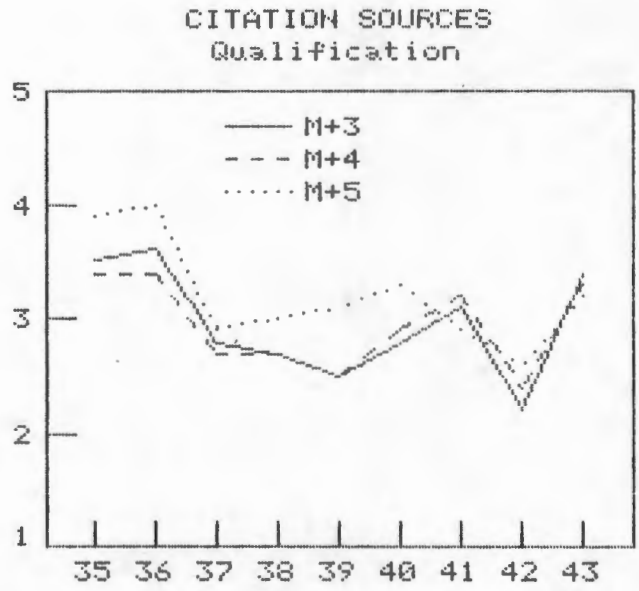
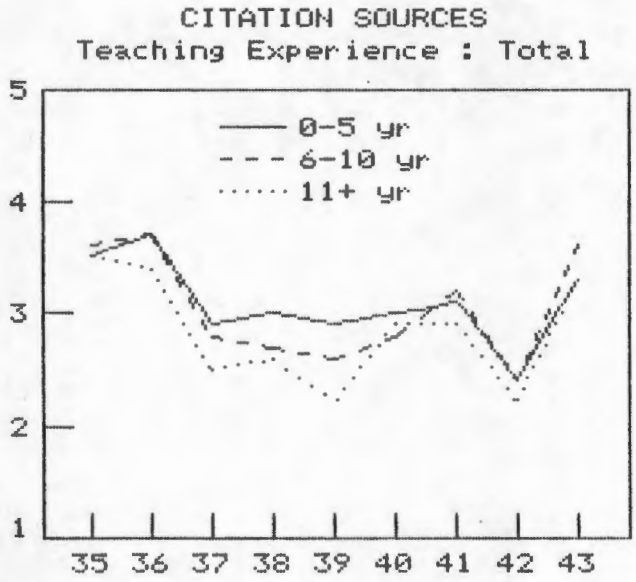
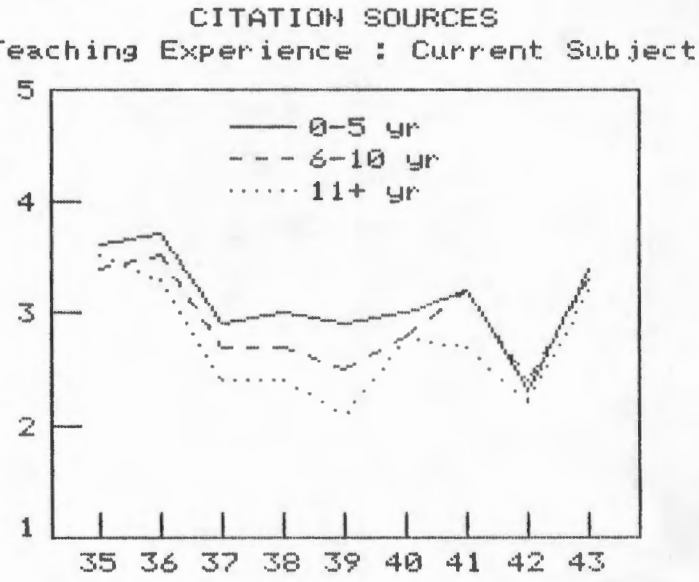

CITATION SOURCES
Qualification
M+3
M+4
M+5
5
4
3
2
1
35 36 37 38 39 40 41 42 43

Figure 4.5a


CITATION SOURCES
Teaching Experience : Total
0-5 yr
6-10 yr
11+ yr
5
4
3
2
1
35 36 37 38 39 40 41 42 43


CITATION SOURCES
Teaching Experience : Current Subject
0-5 yr
6-10 yr
11+ yr
5
4
3
2
1
35 36 37 38 39 40 41 42 43

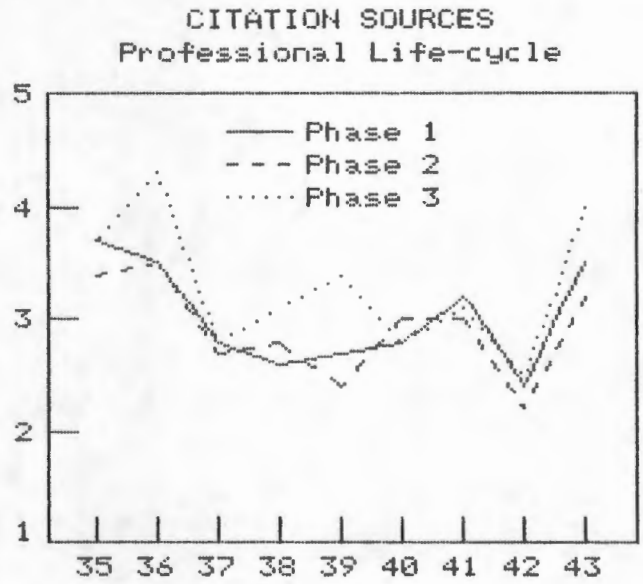

CITATION SOURCES
Professional Life-cycle
Phase 1
Phase 2
Phase 3
5
4
3
2
1
35 36 37 38 39 40 41 42 43

Figure 4.5b

4.2.5 INFORMATION SOURCES FOR LECTURING:

(Variables 44 - 52, Data Tables 2 - 22, Figures 4.6a and 4.6b).

The questions asked in this section related to the following as sources of information for lecturing -

Variable

44 Reference works
45 Handbooks, manuals
46 Monographs, textbooks
47 Published conference proceedings
48 Standards and specifications
49 Patents
50 Trade literature
51 Journal articles
52 Newspapers

The profiles in this section display remarkable consistency, the only significant deviations being with discipline.

Reference works were consistently rated as average or slightly above average. Reference works would appear to be more important to the Technikon lecturers than they are to the respondents of some other surveys; as was indicated in #2.3.3.5, use of such material is generally very low compared with other material. Handbooks and manuals were rated highest in all cases. The considerable difference in the rating of variables 44 and 45 comes as a surprise, since in the Cape Technikon Library many handbooks and manuals are in fact shelved as reference works. One suspects that the lecturers understand these terms in a different way to librarians. Another surprise was the fact that handbooks and manuals were consistently rated higher than monographs and textbooks, which is completely contrary to the findings of other surveys (see #2.3.3.5), although this could be explained by the applied nature of knowledge required at technikons. Other monographs such as textbooks were also consistently given high ratings, although not as high

as handbooks and manuals, a finding which is hard to explain in the light of findings in other surveys (#2.3.3.5) where textbooks usually rate very high in an academic situation, and even in non-academic situations. However, it is possible that the respondents understood the concept "handbooks and manuals" in a wider sense than was intended.

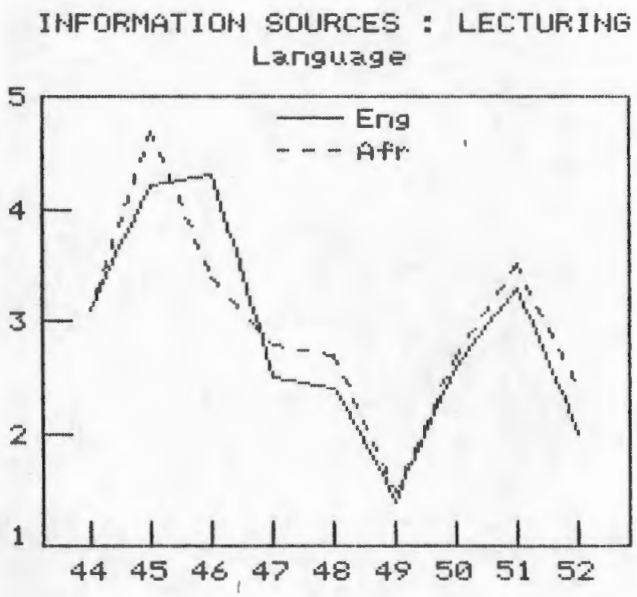
Conference proceedings were given only average or below average ratings, particularly low scores being given by those in the Engineering Sciences and those with long experience. These findings are the opposite to those of Smith's findings (see #2.3.3.5); in fact they contradict observation, since requests to the Library to purchase conference proceedings come chiefly from the engineering Schools.

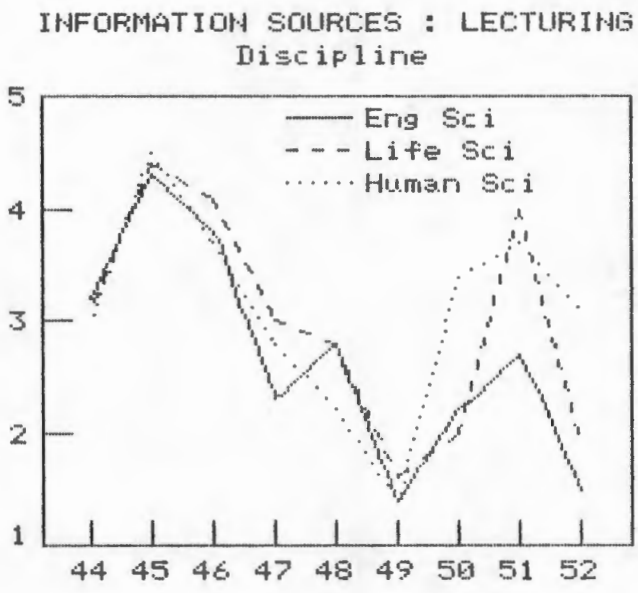
Standards and specifications received below average ratings, particularly by those in the Human Sciences. Similar trends are to be found in other surveys (see #2.3.3.5), but it would appear to be unusual for the Life Sciences to rate standards as high as do the Engineering Sciences. It would appear that patent literature has very little significance for the Technikon lecturers, as patents received some of the lowest scores in the entire survey. This corresponds with low use of patent literature in other surveys of academic situations (see #2.3.3.5)

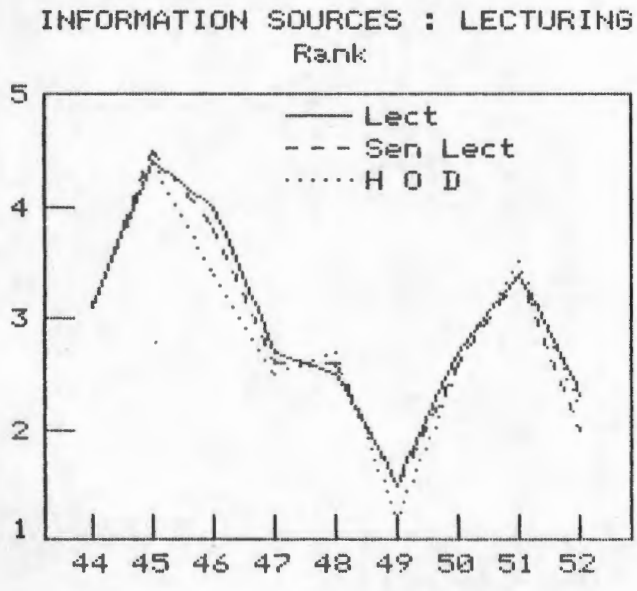
The need for trade literature was consistently rated low, except as would be expected by those in the Human Sciences where lecturers in the various business studies form a majority. As suggested under #2.3.3.5, this result contradicts Skelton's observation that there is nothing equivalent to trade literature for social scientists, which can only be true if business studies are excluded from the social sciences.

Journal articles as a source of information were generally rated as average or above average. Significant differences were displayed in the disciplines where journals were given a high rating along with monographs by those in the Life Sciences and Human Sciences, but rated well below average by those in the Engineering Sciences. The high rating for journals in the Human Sciences suggests that at the Cape Technikon the Human Sciences are dominated by the Social Sciences, since as was indicated in #2.3.3.5, journal use in the Social Sciences is fairly high, while journal use in the Humanities is low. This is consistent with the fact that of six of the Technikon's Schools which may be associated with the Human Sciences, only one (School of Art & Design) may be classified in the Humanities. An unusual aspect is the very low rating given to journals by those in the Engineering Sciences. While other surveys have shown (#2.3.3.5) that those in production and technical or applied aspects use journals less than books, for engineers in an academic situation to rate journals as low as this would appear to be an anomaly.

Newspapers were not regarded as a significant source of information, except by those in the Human Sciences, where again the business lecturers would be expected to find them useful. This corresponds with use of newspapers in other surveys (see #2.3.3.5) which indicate that their use for information purposes is specialised.


INFORMATION SOURCES : LECTURING
Language
Eng
Afr
5
4
3
2
1
44 45 46 47 48 49 50 51 52


INFORMATION SOURCES : LECTURING
Discipline
Eng Sci
Life Sci
Human Sci
5
4
3
2
1
44 45 46 47 48 49 50 51 52


INFORMATION SOURCES : LECTURING
Rank
Lect
Sen Lect
H O D
5
4
3
2
1
44 45 46 47 48 49 50 51 52

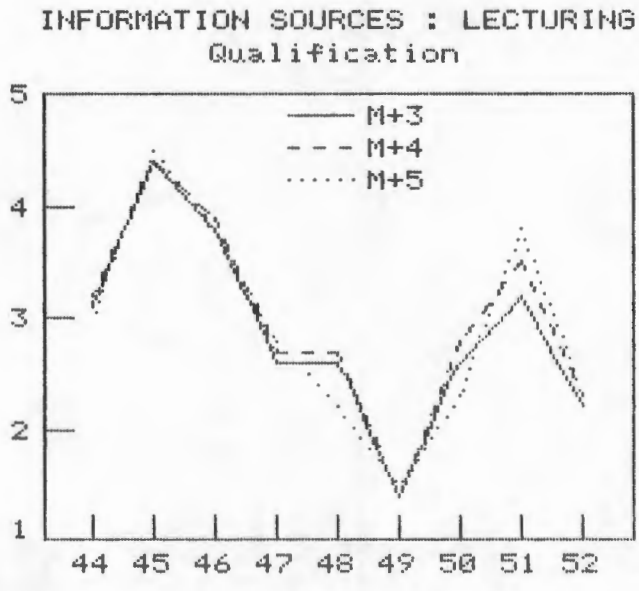
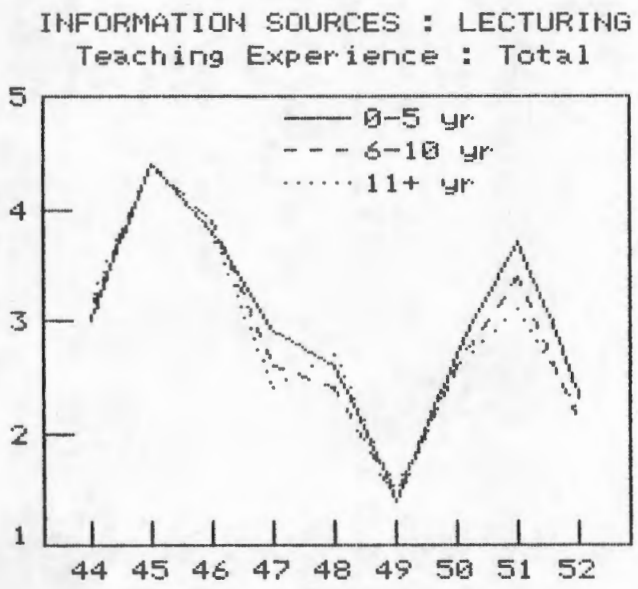
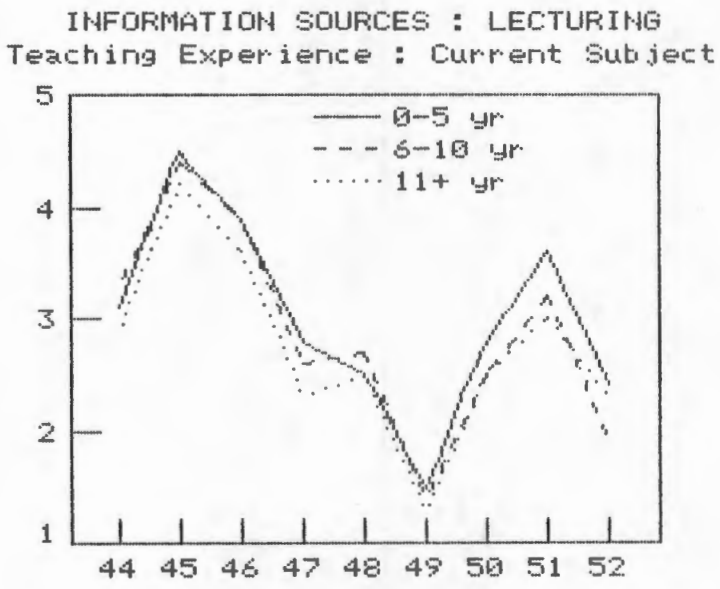

INFORMATION SOURCES : LECTURING
Qualification
M+3
M+4
M+5
5
4
3
2
1
44 45 46 47 48 49 50 51 52

Figure 4.6a


INFORMATION SOURCES : LECTURING
Teaching Experience : Total
0-5 yr
6-10 yr
11+ yr
5
4
3
2
1
44 45 46 47 48 49 50 51 52


INFORMATION SOURCES : LECTURING
Teaching Experience : Current Subject
0-5 yr
6-10 yr
11+ yr
5
4
3
2
1
44 45 46 47 48 49 50 51 52

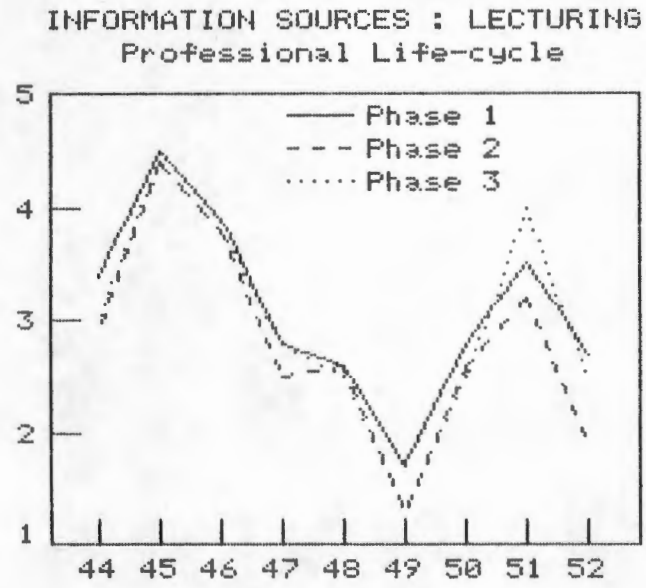

INFORMATION SOURCES : LECTURING
Professional Life-cycle
Phase 1
Phase 2
Phase 3
5
4
3
2
1
44 45 46 47 48 49 50 51 52

Figure 4.6b

4.2.6 INFORMATION SOURCES FOR RESEARCH:

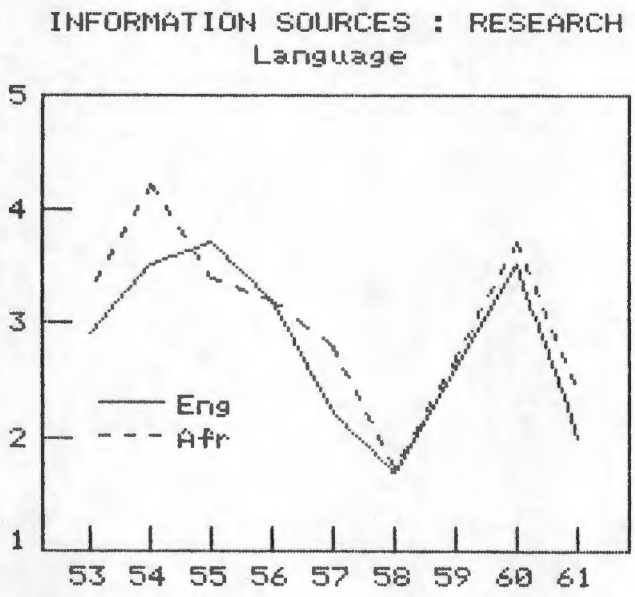
(Variables 53 - 61, Data Tables 1 - 22, Figures 4.7a, 4.7b and 4.8)

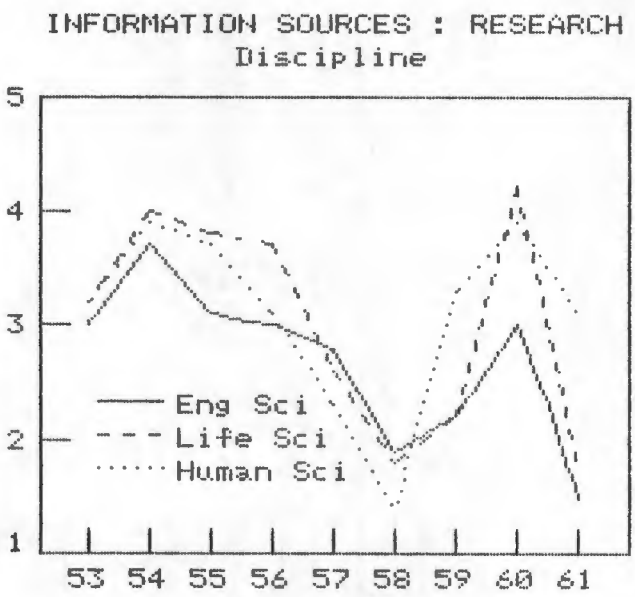
The questions asked in this section related to the following as sources of information for research -

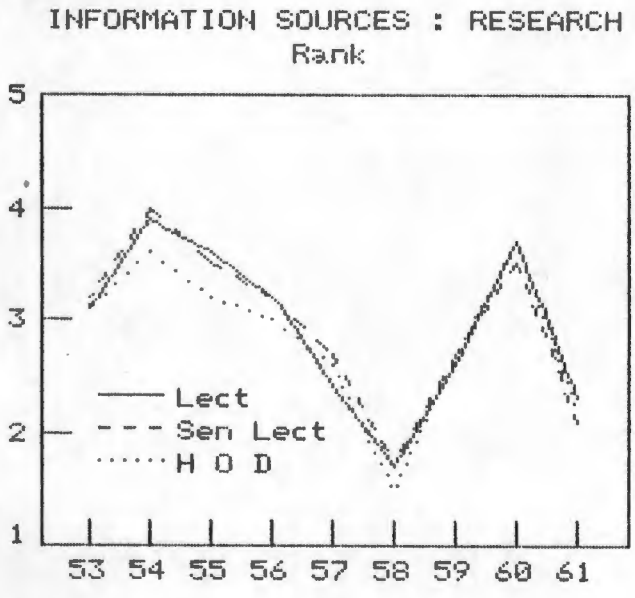
Variable	
53	Reference works
54	Handbooks, manuals
55	Monographs, textbooks
56	Published conference proceedings
57	Standards and specifications
58	Patents
59	Trade literature
60	Journal articles
61	Newspapers

Figure 4.8 is a comparison of the responses of all respondents to variables 44 - 52 (information sources for lecturing) with the responses to variables 53 - 61 (information sources for research). The profiles are remarkably similar to each other, but as might be expected, the need for handbooks and monographs for research purposes was lower, and the need for conference proceedings for research purposes was higher. The need for journal articles for research purposes, however, was only marginally higher. These profiles tend to confirm the observation that the differences between the information needs for lecturing and the information needs for research are differences of degree rather than intrinisic differences (see #2.3.2.6 where the relationship between teaching and research and the resulting information needs were discussed). This would be so particularly at technikons where research is conducted on an applied level rather than a fundamental level.

These trends are reflected in Figures 4.7a and 4.7b which show close similarities to Figures 4.6a and 4.6b, allowing for a reduced need for handbooks and monographs and a greater need for conference proceedings for research purposes. As a result, journal articles play a greater role in research than monographic literature, particularly in the Life Sciences and for those with a definite research orientation (M+5 qualification and phase 3 of the professional life-cycle), as has been shown by other surveys as well (see #2.3.3.5).


INFORMATION SOURCES : RESEARCH
Language
5
4
3
2
1
Eng
Afr
53 54 55 56 57 58 59 60 61


INFORMATION SOURCES : RESEARCH
Discipline
5
4
3
2
1
Eng Sci
Life Sci
Human Sci
53 54 55 56 57 58 59 60 61


INFORMATION SOURCES : RESEARCH
Rank
5
4
3
2
1
Lect
Sen Lect
H O D
53 54 55 56 57 58 59 60 61

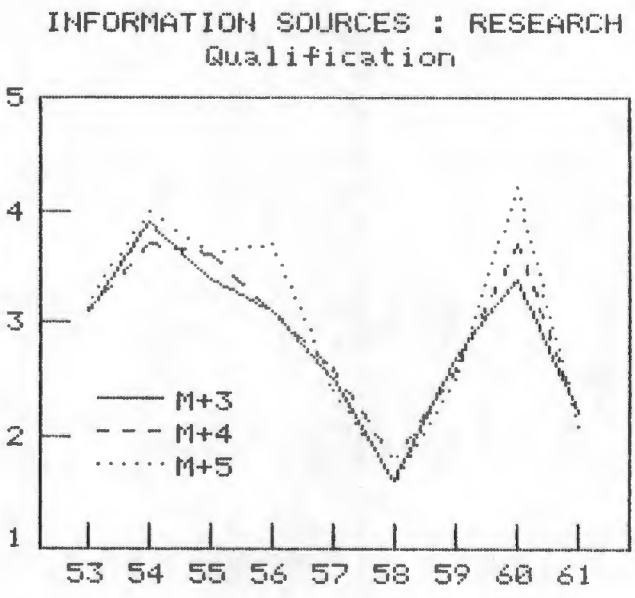
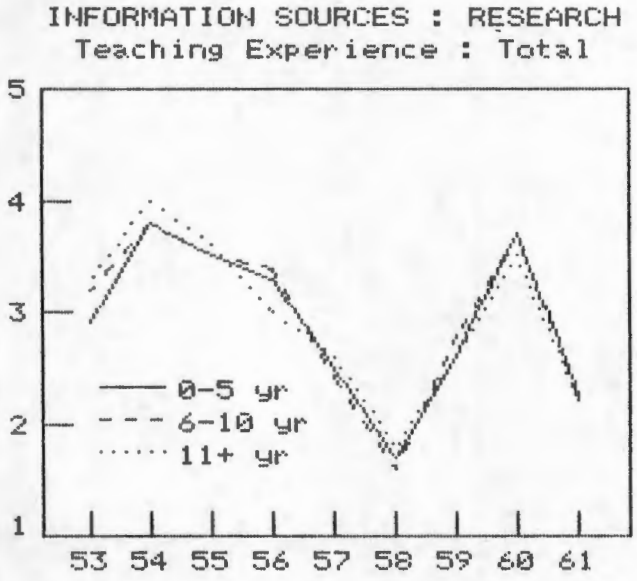
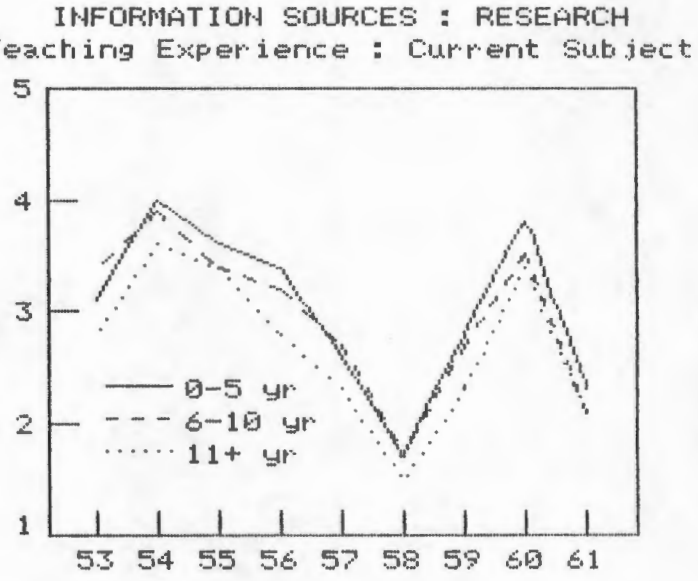

INFORMATION SOURCES : RESEARCH
Qualification
5
4
3
2
1
M+3
M+4
M+5
53 54 55 56 57 58 59 60 61

Figure 4.7a


INFORMATION SOURCES : RESEARCH
Teaching Experience : Total
5
4
3
2
1
0-5 yr
6-10 yr
11+ yr
53 54 55 56 57 58 59 60 61


INFORMATION SOURCES : RESEARCH
Teaching Experience : Current Subject
5
4
3
2
1
0-5 yr
6-10 yr
11+ yr
53 54 55 56 57 58 59 60 61

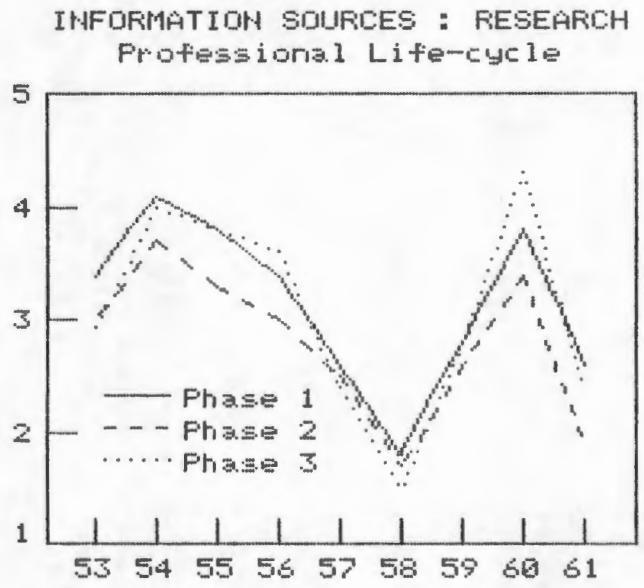

INFORMATION SOURCES : RESEARCH
Professional Life-cycle
5
4
3
2
1
Phase 1
Phase 2
Phase 3
53 54 55 56 57 58 59 60 61

Figure 4.7b

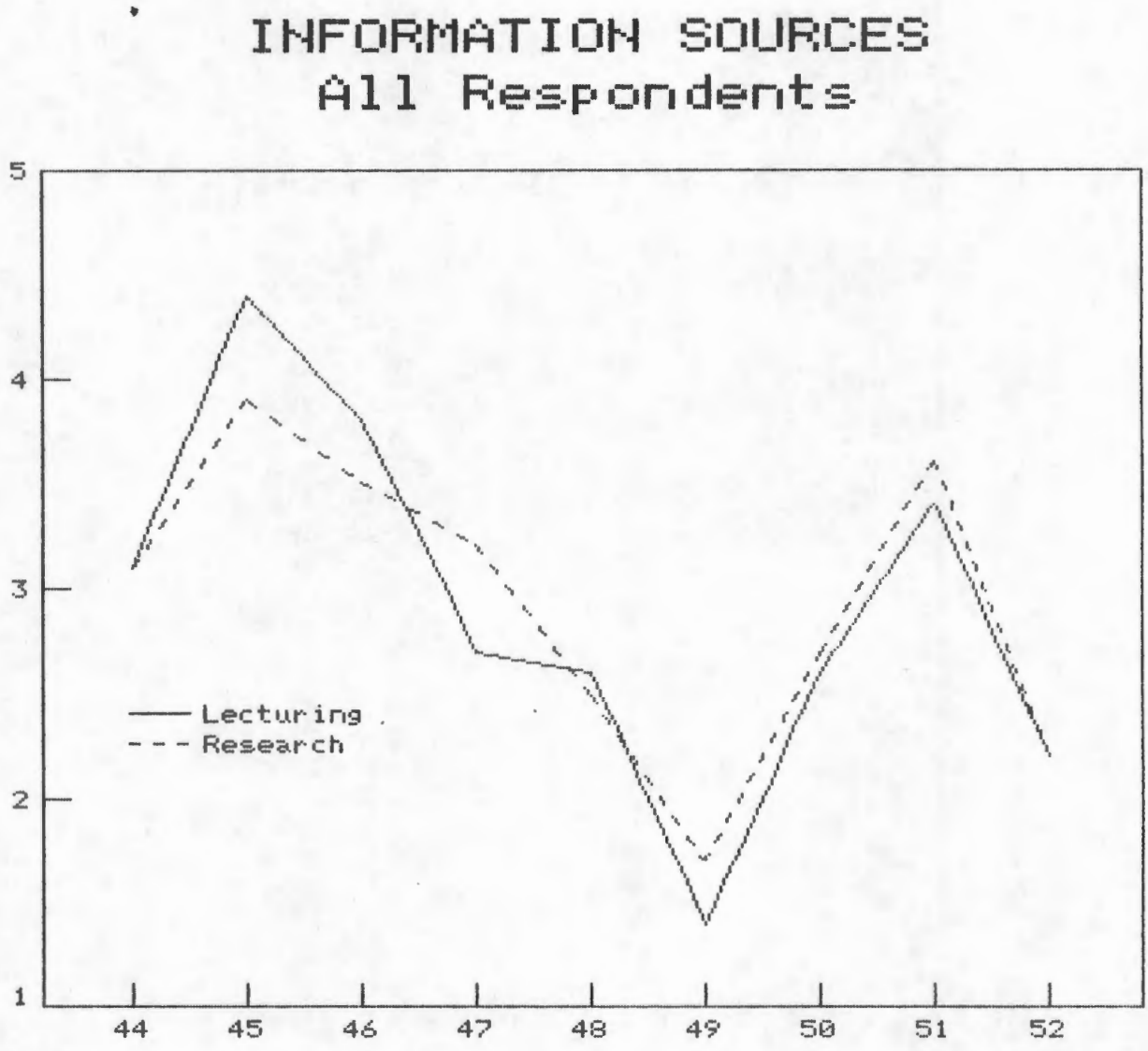

INFORMATION SOURCES
All Respondents
5
4
3
2
1
Lecturing
Research
44
45
46
47
48
49
50
51
52

Figure 4.8

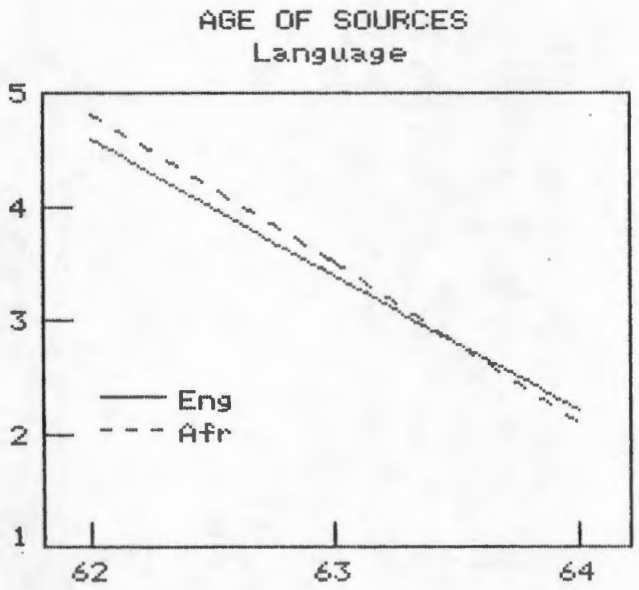
4.2.7 AGE OF SOURCES:

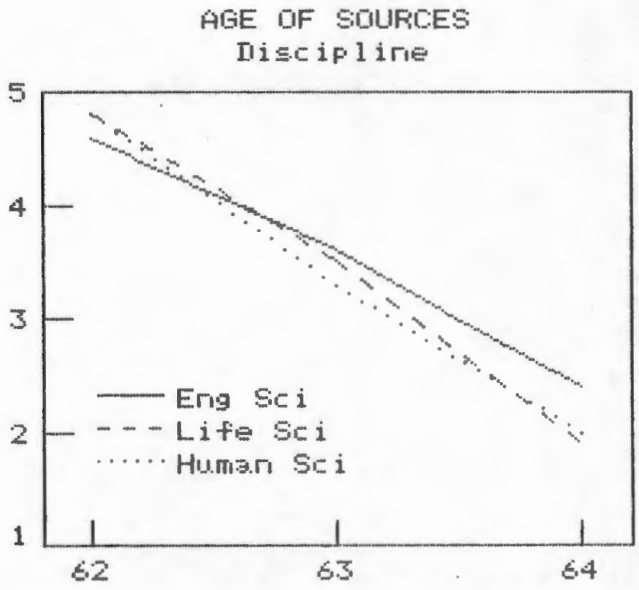
(Variables 62 - 64, Data Tables 2 - 22, Figures 4.9a and 4.9b)

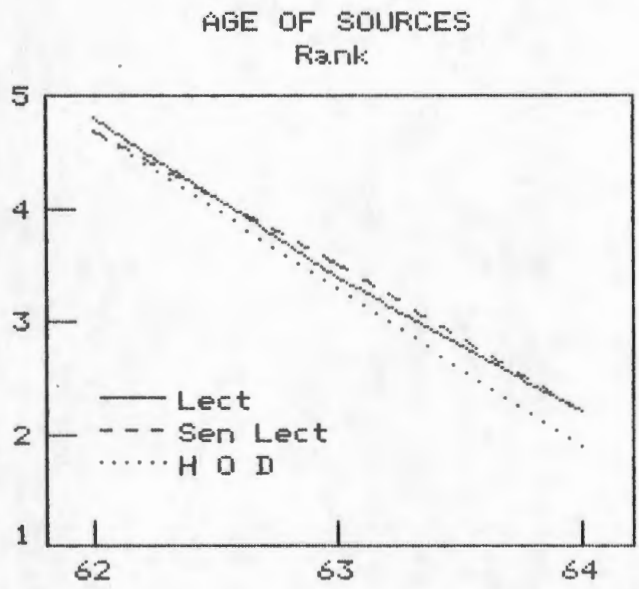
Questions asked in this section related to material published -

Variable	
62	within past 2 years
63	3 - 10 years ago
64	more than 10 years ago

The profiles display a consistent negative correlation between need and age of sources, which confirms findings in other surveys (see #2.3.3.5) that there is a strong tendency for people to prefer the latest literature. All groups scored very high for the latest literature and very low for material more than 10 years old. A surprising result was that those in the Engineering Sciences rated the oldest literature slightly higher than the other disciplines, including the Human Sciences. Most surveys indicate strongest use of older literature in the humanities - see #2.3.3.6. One must remember, however, that the Human Sciences in this survey include the social sciences; furthermore, at the Cape Technikon very few historical subjects are taught, and those that are rely almost entirely on secondary literature sources.


AGE OF SOURCES
Language
5
4
3
2
1
62
63
64
Eng
Afr


AGE OF SOURCES
Discipline
5
4
3
2
1
62
63
64
Eng Sci
Life Sci
Human Sci


AGE OF SOURCES
Rank
5
4
3
2
1
62
63
64
Lect
Sen Lect
H O D

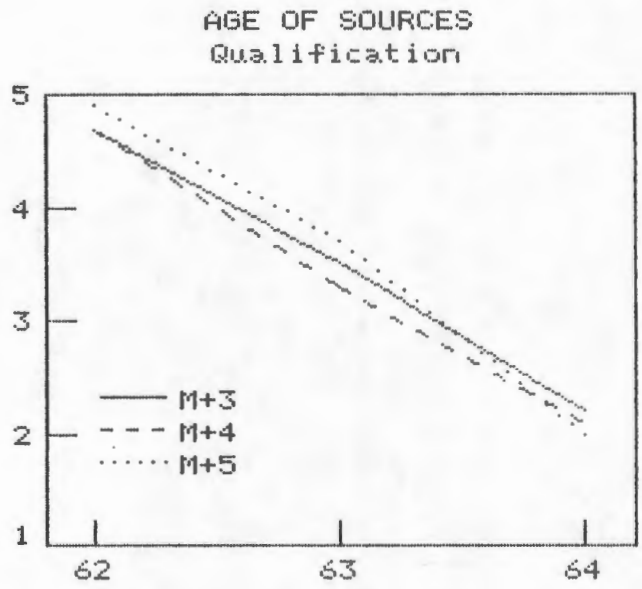
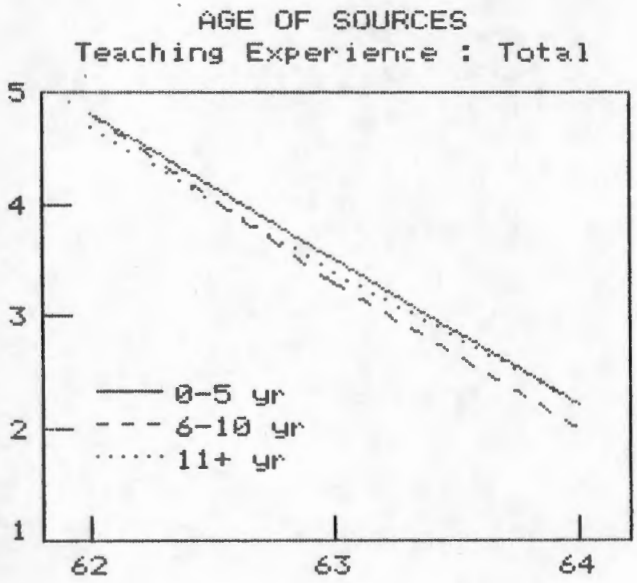
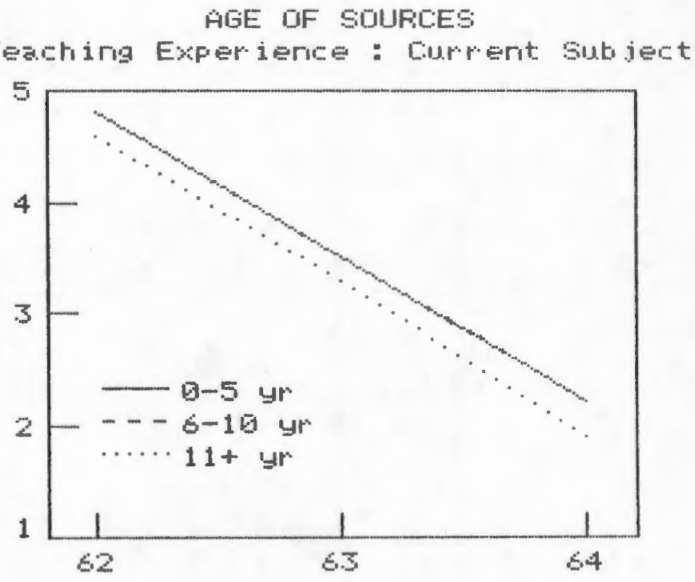

AGE OF SOURCES
Qualification
5
4
3
2
1
62
63
64
M+3
M+4
M+5

Figure 4.9a


AGE OF SOURCES
Teaching Experience : Total
5
4
3
2
1
62
63
64
0-5 yr
6-10 yr
11+ yr


AGE OF SOURCES
Teaching Experience : Current Subject
5
4
3
2
1
62
63
64
0-5 yr
6-10 yr
11+ yr

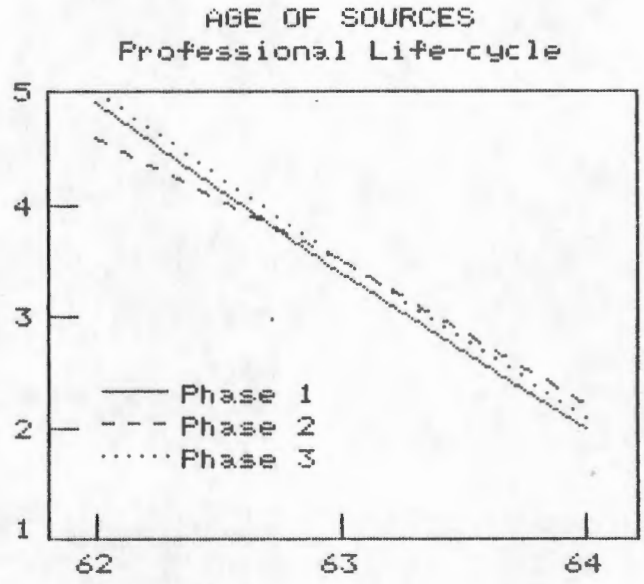

AGE OF SOURCES
Professional Life-cycle
5
4
3
2
1
62
63
64
Phase 1
Phase 2
Phase 3

Figure 4.9b

4.3 EFFECTIVENESS OF THE LIBRARY IN MEETING INFORMATION NEEDS

Note that the paragraph numbering in #4.3 corresponds directly to the numbering of of the sections in the questionnaire document (see #6.2), thus #4.3.1 corresponds to the questionnaire section #3.1.

As indicated in #3.6.1.7, non-response to some of the questions in this section can be accepted as an indication that the respondent had no experience of that aspect of the Library's services, or that that particular service was not relevant to the respondent's needs. In each case therefore the percentage non-response is indicated below, and will be regarded as significant if greater than approximately 20%.

4.3.1 LIBRARY GOALS:

(Variables 65 - 69, Data Table 1, Figure 4.10)

In this section the questions related to what the respondents regarded as the most important goals for the Library. They were asked to place the following goals in rank order:

Variable		% non-response
65	Maximise number of users	3
66	Maximise satisfaction	3
67	Maximise recall	3
68	Maximise precision	3
69	Minimise effort	3

The result for all respondents was a ranking of the goals as follows (from least important to most important):

(1) Maximise the number of users of the Library
(2) Minimise the effort needed to use the Library
(3) Maximise recall (number of items produced by a search)
(4) Maximise precision (usefulness of items produced by a search)
(5) Maximise the satisfaction of people using the Library.

As end users of the library system, the lecturers were clearly more interested in output (their satisfaction) than through-put (number of users). Recall, precision and effort may be regarded as aspects of satisfaction, and of these they regarded precision as the most important.

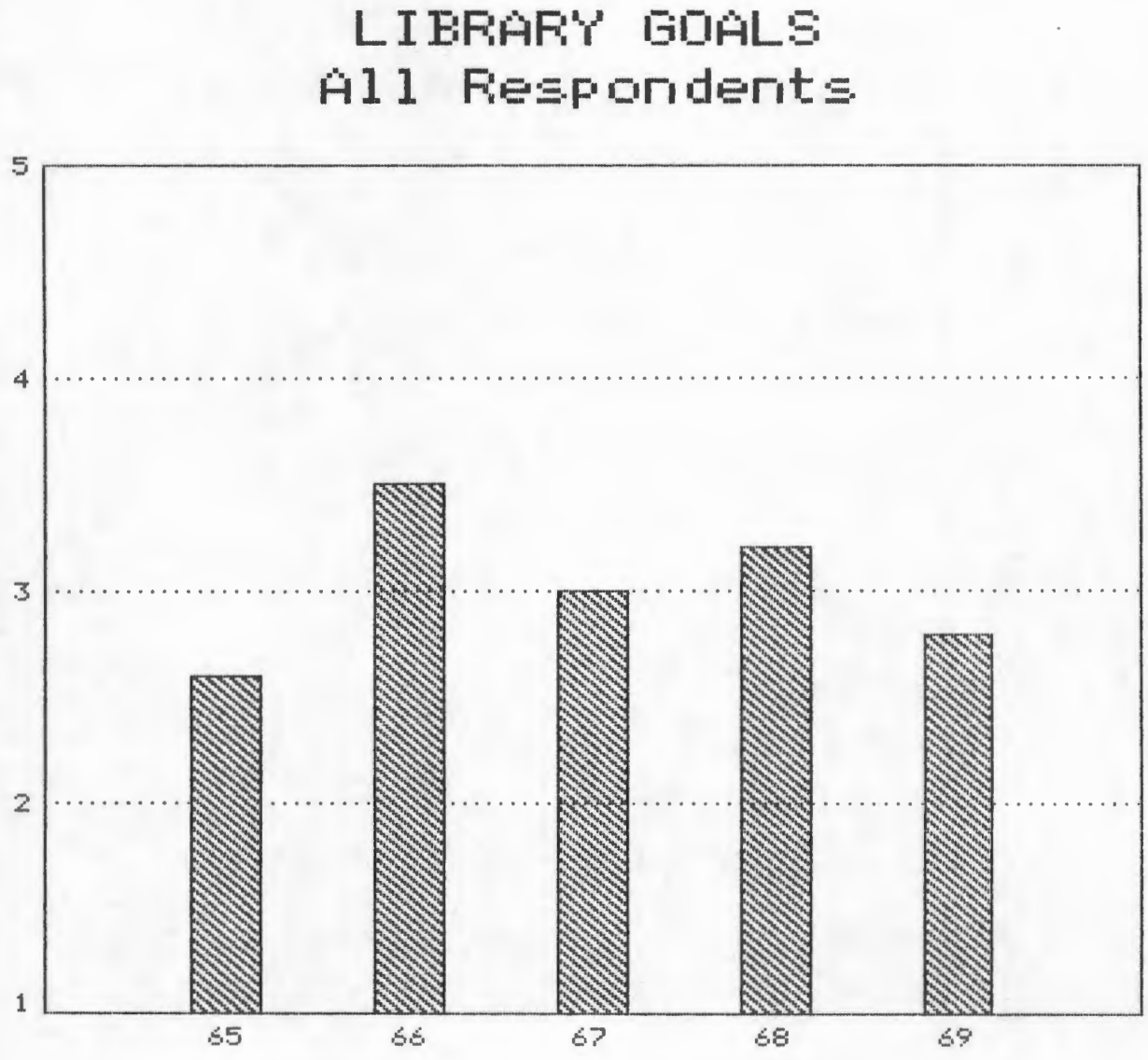


Figure 4.10

4.3.2 FREQUENCY OF LIBRARY USE:

(Variable 70, Data Table 1, Figure 4.11)

In this section, an attempt was made to gauge the frequency of use of the Library using the following time categories to code Variable no. 70:

	% non-response
Less than once a semester	1
2 - 3 times a semester	1
2 - 3 times a month	1
2 - 3 times a week	1
More than once a day	1

No attempt was made to determine the type of use, nor the usefulness of visits.

All respondents claimed to visit the Library at least once in a semester, but it was disappointing to find that 13 respondents visit the Library about once a month or less. A third of the respondents visit the Library 2 to 3 times a month, while over half of them visit the Library 2 to 3 times a week. This can be regarded as a satisfactory level of usage when one considers the low usage of intitutional libraries found in some past surveys (see #2.3.3.2). A small core of 11 respondents visit the Library more than once a day. It can be assumed from observation that at least one of the daily visits of the latter group was to read the newspapers.

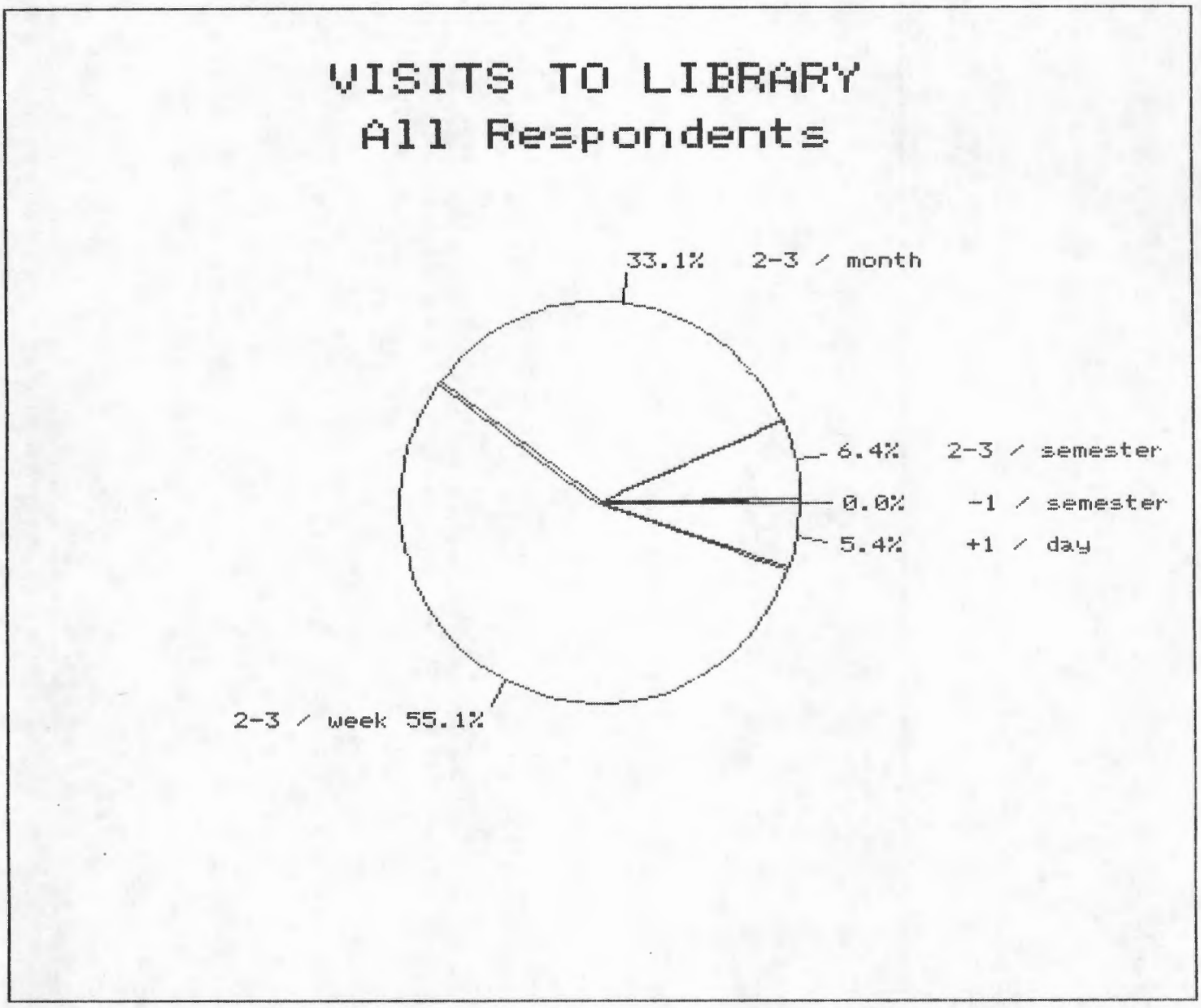

VISITS TO LIBRARY
All Respondents
33.1% 2-3 / month
6.4% 2-3 / semester
0.0% -1 / semester
5.4% +1 / day
2-3 / week 55.1%

Figure 4.11

4.3.3 LIBRARY SERVICES:

(Variables 71 - 78, Data Table 1, Figure 4.12)

The questions asked in this section related to the effectiveness of the Library in -

Variable		% non-response
71	Providing citations	18
72	Providing items from own stock	1
73	Providing items on interlibrary loan	17
74	Providing answers to queries	10
75	Providing current awareness	9
76	Providing facilities for search conducted by self	4
77	Providing Subject Librarians to assist in searching	7
78	Providing study/work space	5

All these services were rated above average, except for the provision of study or work space for which the weighted average was 2.6. This particular aspect was known to be inadequate at the time of the survey, and this low score was expected.

Provision of citations was only marginally above average, and this could possibly be attributed to the relatively unsophisticated citation needs reflected in #4.2.4 and #4.3.4, and to ignorance about what the Library can in fact provide.

The low rating for current awareness is disappointing as the Library issues a Current Awareness Bulletin tailored to the needs of Schools and Departments. This service has received favourable verbal comment, and one would therefore expect the rating to be higher. On the other hand, this low rating may be connected with the low rating given for the provision of recent literature (to be discussed in #4.3.7).

The Library's ability to answer queries and to provide Subject Librarians able to assist with searches were rated on a par and at an acceptable level.

The Library's facilities to enable respondents to conduct a search themselves was rated higher than its ability to provide Subject Librarians, suggesting a preference by many lecturers to conduct searches themselves.

The highest ratings were given to the Library's ability to provide items, with the interlibrary loans system rated higher than provision of items from the Library's own stock. While this is a compliment to the way in which the Library handles interlibrary loans, it is also an indictment of the quality of its stock, since the need to call on outside sources (especially in the area of periodical literature) is frequent.

None of these scores is exceptionally high (the highest being 3.7), which indicates that there is considerable room for improvement in the Library's services.

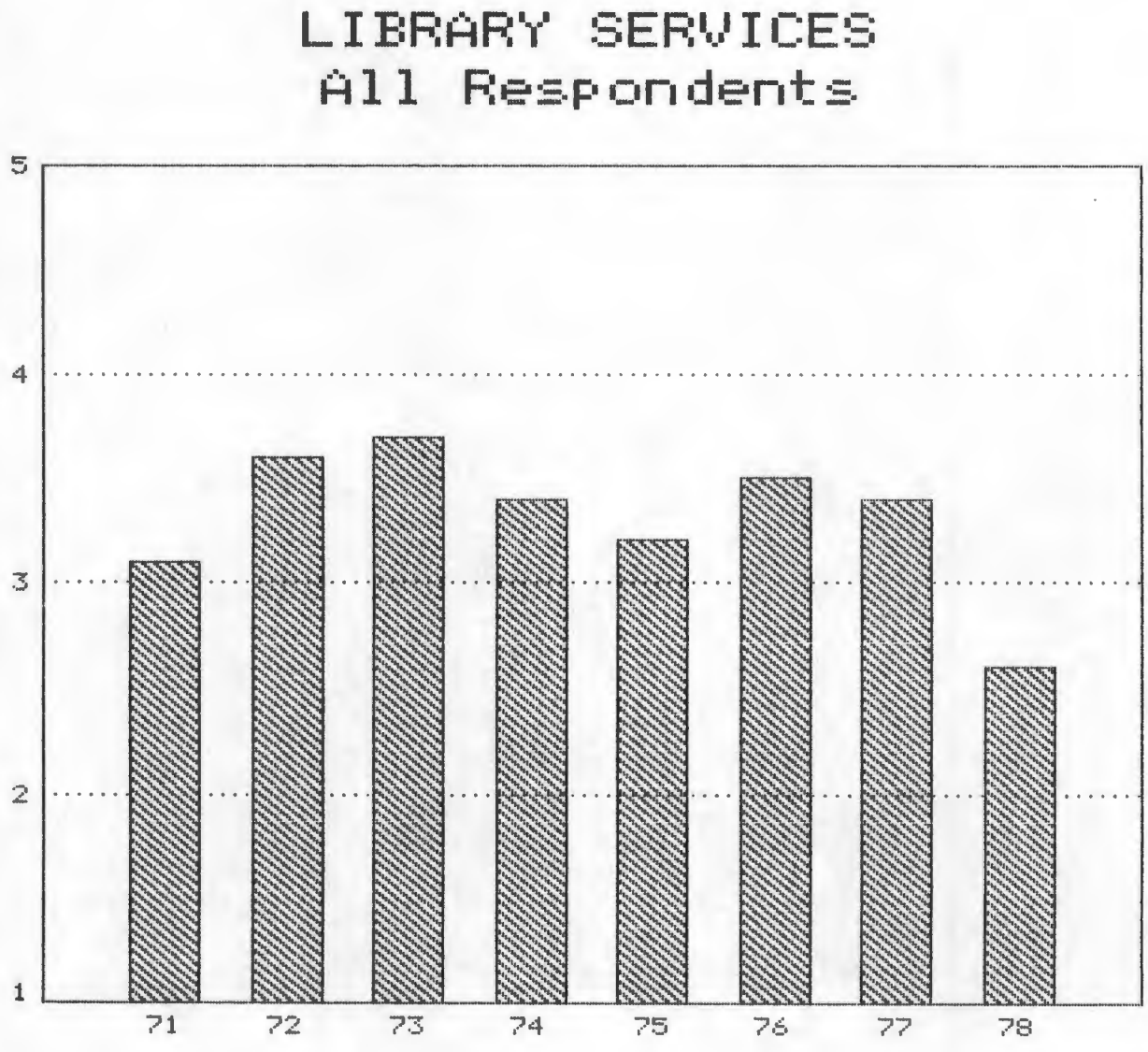

LIBRARY SERVICES
All Respondents
5
4
3
2
1
71
72
73
74
75
76
77
78

Figure 4.12

4.3.4 CITATION SOURCES:

(Variables 79 - 87, Data Table 1, Figure 4.13)

The questions asked in this section related to the effectiveness of the Library in providing the following citation sources -

Variable		% non-response
79	Books, monographs	15
80	Journal articles	15
81	Published conference proceedings	25
82	Printed abstract/index journals	21
83	Computerised abstract/index services	32
84	Review journals	21
85	Library current awareness services	20
86	Bibliographies, literature surveys	27
87	Library catalogues	18

If we take a non-response higher than approximately 20% as significant, we can conclude that a significant number of the lecturers were unfamiliar with or did not need conference proceedings, computerised abstract services, bibliographies and literature surveys as sources for citations. The response in this section suggests that only the basic sources (books, journal articles, printed abstract and index journals, review journals, library catalogues and library current awareness services) were well used, indicating a relatively unsophisticated approach to literature searching.

The effectiveness profile (Figure 4.13) follows the need profile very closely, althogh it does suggest that the Library needs to improve in the provision of journal articles, conference proceedings and computerised abstract services.

Experience and observation suggest that some of these figures are not entirely reliable. For example, the score given to the provision of computerised abstract services was too high, since the Library introduced such a service only one month before the survey was conducted, and the

service was relatively unknown.

Scores for the provision of review journals, bibliographies and literature reviews which are higher than the need scores are reflections of low need rather than high library effectiveness; in the writer's opinion, the Library remains inadequate in these areas.

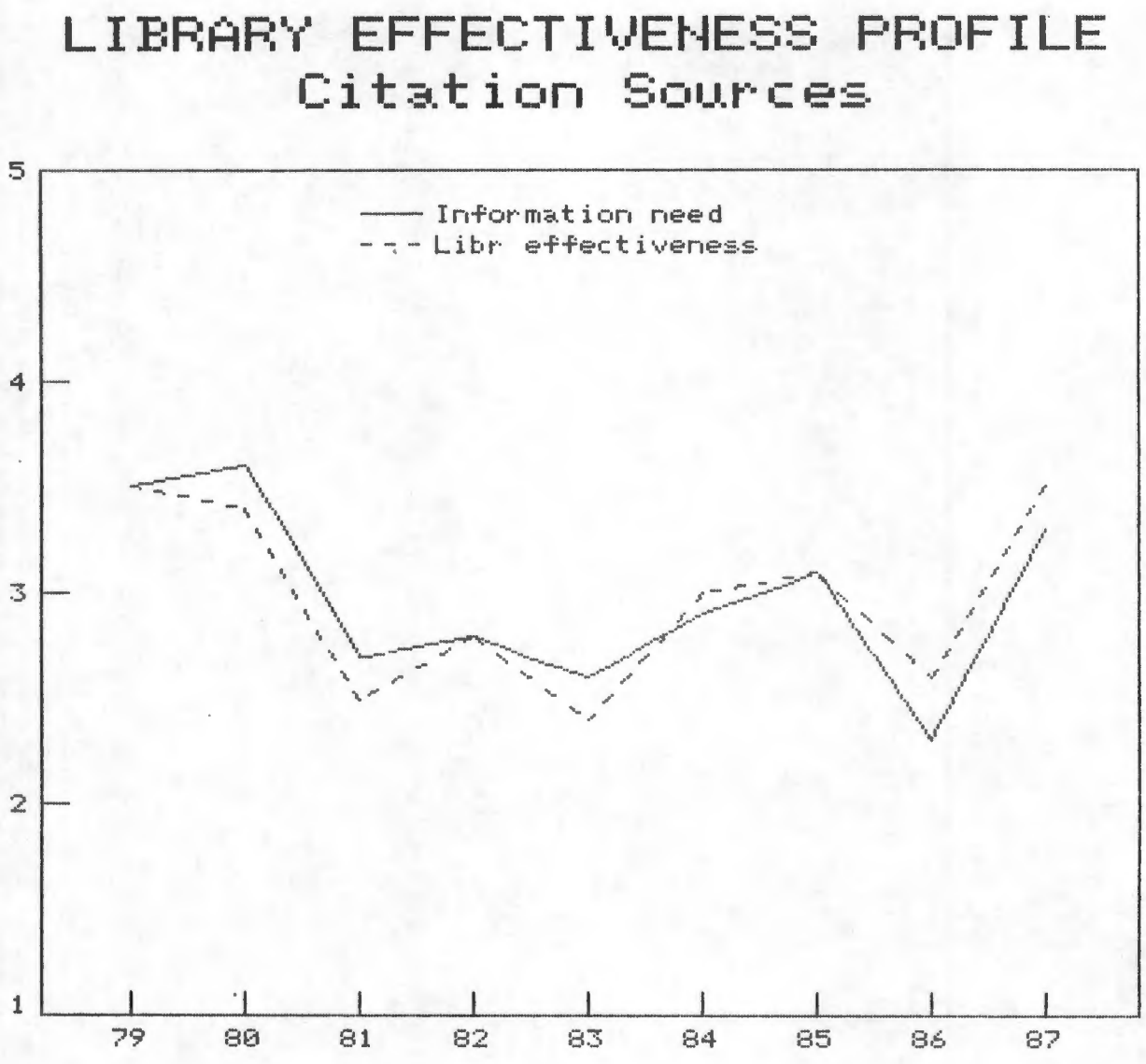

LIBRARY EFFECTIVENESS PROFILE
Citation Sources
Information need
Libr effectiveness
5
4
3
2
1
79
80
81
82
83
84
85
86
87

Figure 4.13

4.3.5 INFORMATION SOURCES FOR LECTURING:

(Variables 88 - 96, Data Table 1, Figure 4.14)

The questions asked in this section related to the effectiveness of the Library in providing the following sources of information for lecturing -

Variable		% non-response
89	Handbooks, manuals	5
90	Monographs, textbooks	7
91	Published conference proceedings	19
92	Standards and specifications	25
93	Patents	40
94	Trade literature	21
95	Journal articles	11
96	Newspapers	20

The high percentage of non-response for the questions on standards, specifications and patents is a reflection of the limited need for this type of source already discussed in #4.2.5.

The effectiveness profile (Figure 4.14) follows the need profile fairly closely, except in the case of handbooks and manuals where there is a considerable discrepancy. This is surprising, as the Library has bought extensively in this area over recent years. This discrepancy may be partly owing to the very high rating given to the need for this type of material, and partly owing to ignorance of what is available in the Library. The shortfall in the case of monographs and textbooks is negligible, while the shortfall in the case of conference proceedings clearly needs attention.

Effectiveness was rated above need in the case of reference works, patents, journals and newspapers.

The rating (1.8) for the Library's ability to supply patent literature was strange as prior to the survey, only one (unsuccessful) attempt to supply such literature is known; it should therefore have been close to 0.0! Similarly, a rating of 2.9 for trade literature was inappropriate, as the Library makes no special effort to supply such literature.

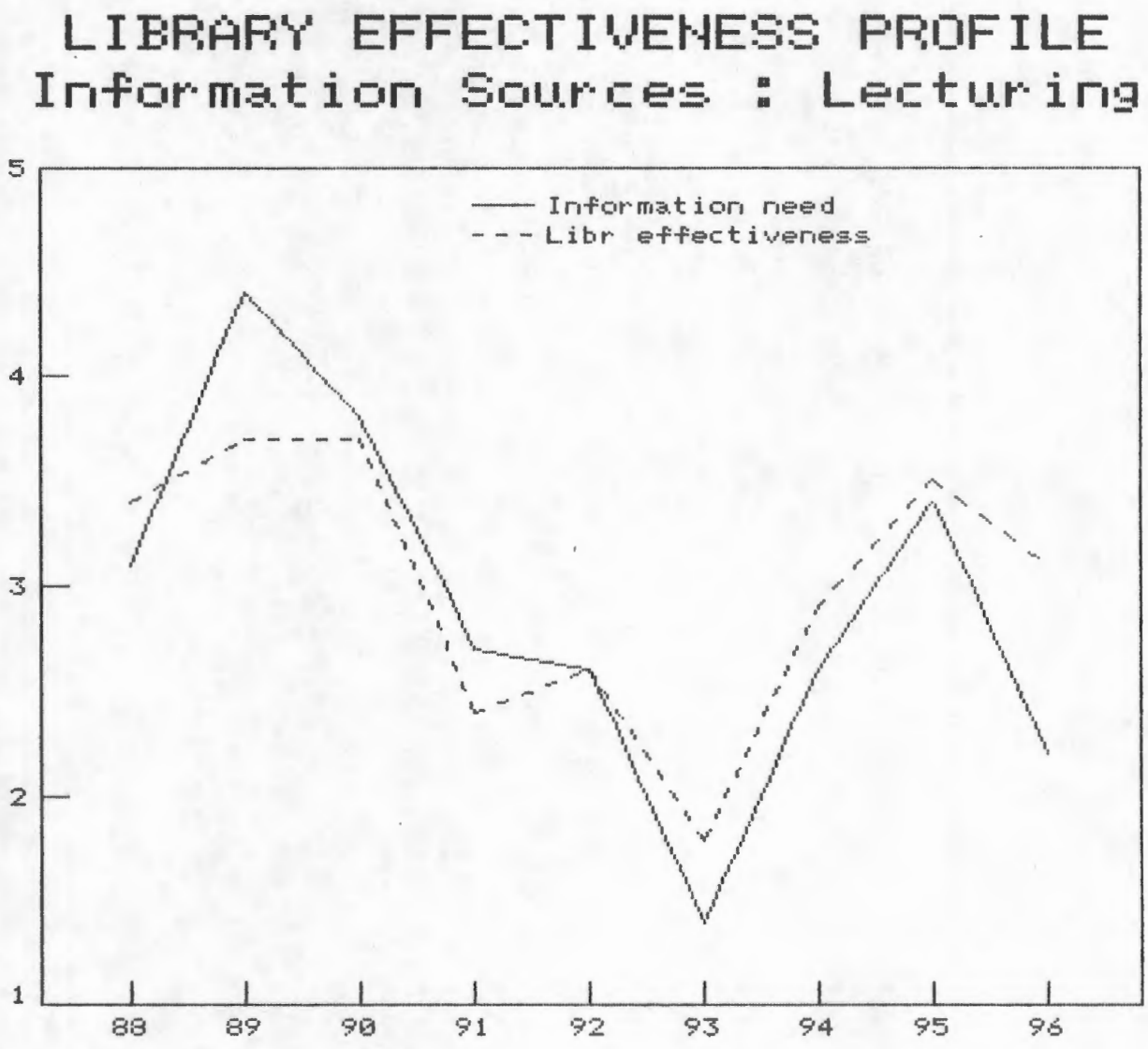

LIBRARY EFFECTIVENESS PROFILE
Information Sources : Lecturing
Information need
Libr effectiveness
5
4
3
2
1
88
89
90
91
92
93
94
95
96

Figure 4.14

4.3.6 INFORMATION SOURCES FOR RESEARCH:

(Variables 97 - 105, Data Table 1, Figure 4.15)

The questions asked in this section related to the effectiveness of the Library in providing the following sources of information for research -

Variable		% non-response
97	Reference works	17
98	Handbooks, manuals	15
99	Monographs, textbooks	17
100	Published conference proceedings	24
101	Standards and specifications	33
102	Patents	41
103	Trade literature	29
104	Journal articles	20
105	Newspapers	30

The high non-response rates throughout this section are yet a further indication of the small number of lecturers who were involved in research. A number of respondents added comments in this section to the effect that it was irrelevant for them.

The profiles for research (Figure 4.15) show similar divergences to those for lecturing (Figure 4.14), but there are differences. Thus, the shortfall for handbooks and manuals is not as great (although still considerable), but this is a result of lesser need for this type of material for research purposes. The shortfall for monographic literature is greater and becomes significant. Provision of conference proceedings is clearly inadequate for research purposes. Provision of journal literature, while being regarded as adequate for lecturing purposes, is inadequate for research purposes.

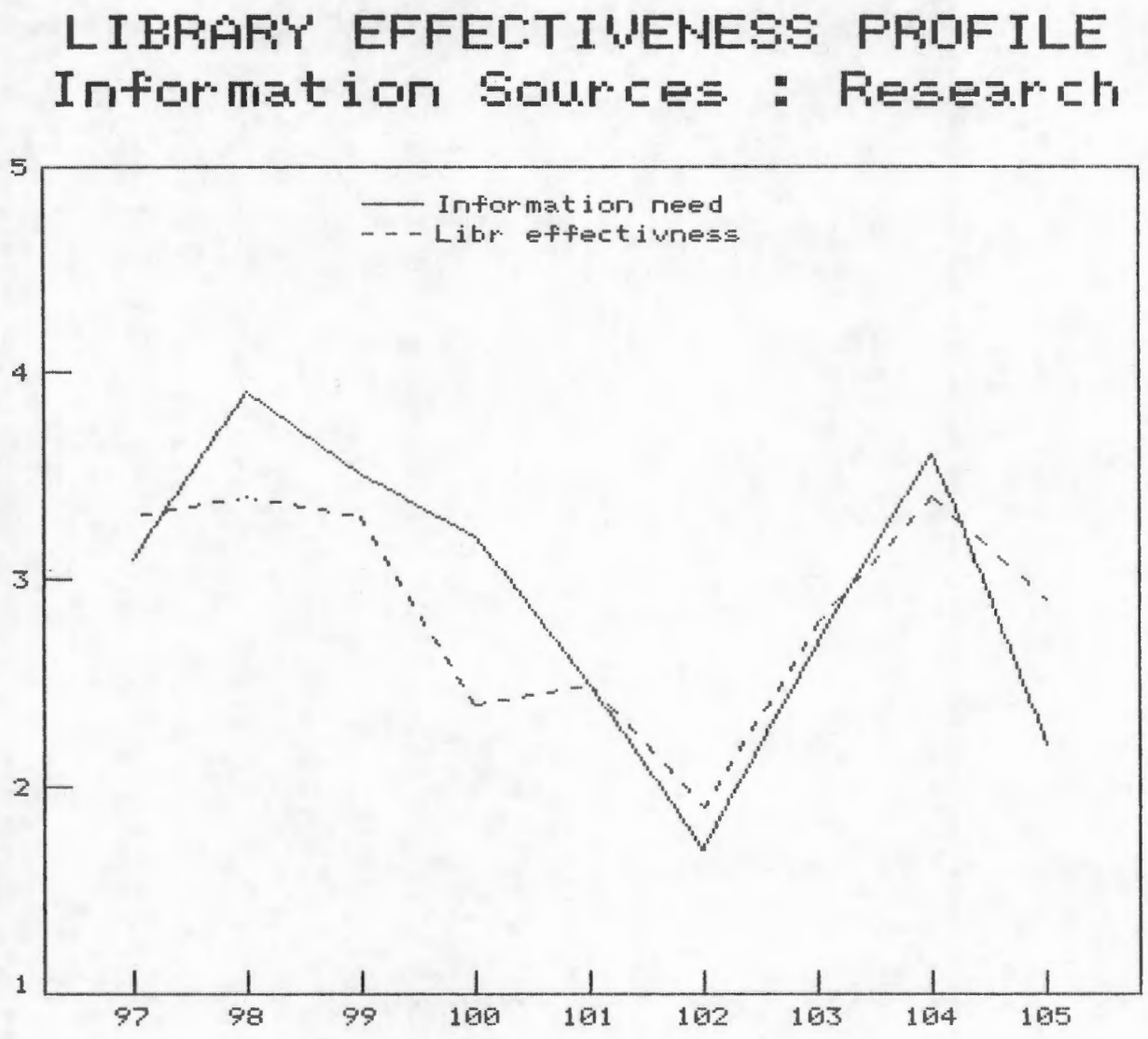

LIBRARY EFFECTIVENESS PROFILE
Information Sources : Research
Information need
Libr effectivness
5
4
3
2
1
97
98
99
100
101
102
103
104
105

Figure 4.15

4.3.7 AGE OF SOURCES:

(Variables 106 - 108, Data Table 1, Figure 4.16)

The questions asked in this section related to the effectiveness of the Library in providing sources published -

Variable	% non-response
106 within past 2 years	11
107 3 - 10 years ago	13
108 more than 10 years ago	24

The high non-response rate for material older than 10 years is a reflection of the low need for such material (see #4.2.7).

There are dramatic divergences in the profiles (Figure 4.16). The Library was considered to be more than adequate in supplying the limited amount of older material required, but woefully inadequate in supplying the great need for the latest literature.

It should be noted that the effectiveness rating for the latest literature is in fact slightly higher than than for literature published 3 to 10 years ago, but it is still far from adequate to supply the demand for recent literature.

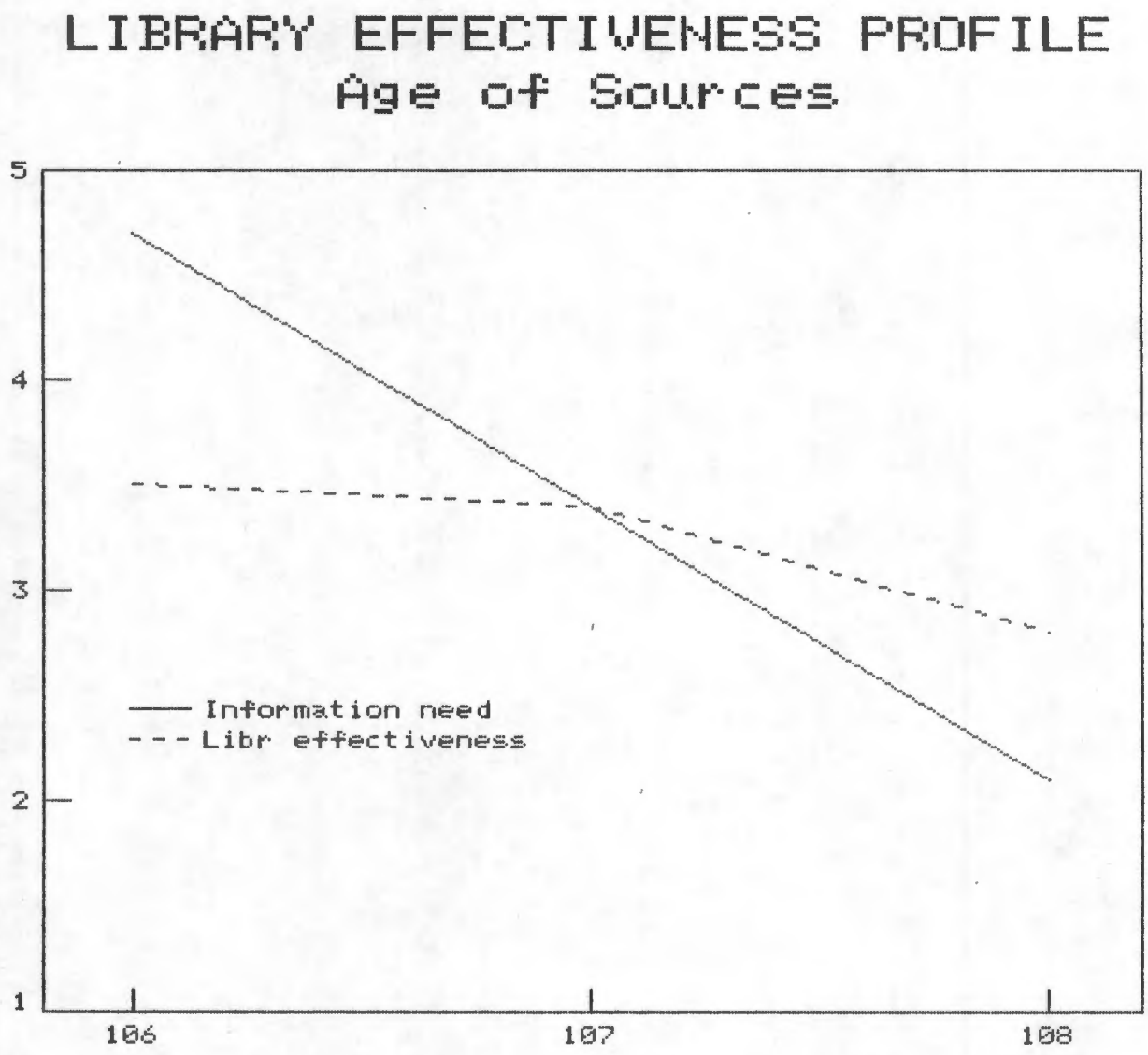

LIBRARY EFFECTIVENESS PROFILE
Age of Sources
5
4
3
2
1
Information need
Libr effectiveness
106
107
108

Figure 4.16

5. CONCLUSIONS

Having analysed the results of the empirical study in Chapter 4, it is now necessary to draw general conclusions from the results. However, it must be borne in mind that there is often a problem in interpreting the results of surveys, for example, Ford (1973, p.100) has pointed out that if, for example, we find that engineers read less than scientists, we could postulate a number of possible explanations:

(1) Engineers cannot read

(2) Engineers do not need to read

(3) Engineers use more informal channels

(4) Libraries provide the wrong kind of service

In some cases, therefore, conclusions must be regarded as tentative, and results would need to be subjected to further research to determine the correct causes of the results.

With this proviso, conclusions will be drawn in the two main areas of the study (viz. the information needs of lecturers at the Cape Technikon, and the effectiveness of the Technikon Library in meeting those needs), and in terms of the original research questions which were posed in the Introduction (#1.3), viz.

(1) What are the information needs of the Technikon's lecturers? What channels and sources do they need for current awareness, finding citations, lecture preparation, research?

(2) What is the relative importance of each of these needs to lecturers. How do these needs vary with variables such as discipline, rank,

qualifications, experience, work activity?

(3) How do the lecturers rate the Library in its ability to meet these needs. In what aspects are the library services adequate or inadequate?

(4) What influence could these findings have for the future of the Cape Technikon Library, and possibly for other technikon libraries?

The answers to questions (1) to (3) will be found in #5.1 and #5.2 below, while an attempt to answer question (4) will be made in #5.3 where recommendations for the future will be made on the basis of the conclusions in #5.1 and #5.2.

5.1 INFORMATION NEEDS OF THE LECTURERS

Conclusions are drawn here in terms of the two independent variables which appear to have the greatest influence on lecturers' information needs, viz. discipline and work activity.

5.1.1 THE INFLUENCE OF DISCIPLINE:

Discipline would appear to have had the greatest influence in determining the particular information needs of the lecturers at the Cape Technikon. In general, this influence followed that found in other surveys, but unusual characteristics found at the Cape Technikon are discussed below.

5.1.1.1 Engineering Sciences:

The information needs of lecturers in the Engineering Sciences appear to be particularly unsophisticated. This is indicated by the fact that they seldom consulted colleagues outside the Technikon (#4.2.1); they seldom used

outside sources of information such as research and professional institutes (#4.2.2); their use of Subject Librarians was low compared with lecturers in the other disciplines (#4.2.3); their use of citation sources was consistently lower than that of lecturers in the other disciplines (#4.2.4); their use of printed abstract and index journals was low (#4.2.4); their use of conference proceedings was low (#4.2.5); their use of journal literature was extremely low (#4.2.5); their use of literature older than 10 years was the highest in the Technikon (#4.2.7). While it is recognised that the information needs of those in applied sciences such as engineering are less sophisticated than those in the basic sciences (#2.3.3.3), the results outlined above would indicate that the information needs of the lecturers in the Engineering Sciences at the Cape Technikon are particularly unsophisticated. This would suggest an element of academic stagnation in this discipline. The small proportion with higher qualifications (#4.1.2.3) and the lack of formal research (#4.1.2.5) in this group would seem to confirm this observation.

5.1.1.2 Life Sciences:

The information needs of lecturers in the Life Sciences appear to be the most sophisticated in the Technikon. This was a small group (#4.1.1.2), with a large proportion of inexperienced lecturers (#4.1.2.4), yet a high proportion of advanced qualifications (#4.1.2.3). They considered abstract and index journals, review literature and computerised services as important for current awareness (#4.2.1); they made use of local university libraries as well as the Cape Technikon Library (#4.2.2); they preferred to consult outside colleagues, rather than colleagues within the Technikon (#4.2.3); they regarded journals as very important as citation sources (#4.2.3) and as information sources (#4.2.4 and #4.2.5); they used review literature more

than any other discipline (#4.2.4). These findings confirm observations by the Library staff that lecturers in the Life Sciences together with their students generate a high proportion of Library use which takes place at a sophisticated level.

5.1.1.3 Human Sciences:

The information needs of lecturers in the Human Sciences bears no relation to the findings of other surveys covering the Humanities, but there was a fairly close correlation between their information needs and those of social scientists in other surveys. For example, they tended to use abstract and index journals rather than bibliographies and literature surveys (#4.2.4); they regarded journal articles as just as important as monographs as sources of information (#4.2.4); like the other disciplines, they showed little interest in literature older than 10 years, but considerable interest in recent literature (#4.2.7). As was indicated in the discussion in #4.2.5, of the six Schools which may be associated with the Human Sciences, only one (the School of Art & Design) may be classified as belonging to the humanities. The other Schools consist of disciplines such as communication, education and management, disciplines which are associated with the Social Sciences.

5.1.2 THE INFLUENCE OF WORK ACTIVITY:

Work activity is widely regarded as an important influence of information need (#2.3.2.6), and there are two factors in the Cape Technikon which bring about such an influence. These are (a) the need for frequent change of subject taught (#4.1.1.5, #4.1.2.7 and #4.1.2.8), and (b) the minimal formal research taking place in the Technikon (#4.1.1.5, #4.1.2.8

and #4.3.6). These two factors have a strong influence on the information needs of the lecturers, although the direction of that influence is what would be expected.

5.1.2.1 Change of subject:

As would be expected, there was a positive correlation between length of experience and consultation with colleagues (#4.2.1 and #4.2.3); while there was a negative correlation between length of experience and use of abstract and index journals (#4.2.1 and #4.2.3), library current awareness services (#4.2.4); conference proceedings (#4.2.5); and consultation with the Subject Librarians (#4.2.3). These results could reflect the development of the "invisible college" with experience, and a diminishing need for intensive current awareness services as knowledge of one's subject increases.

Alternatively, another way of interpreting these results may be that those with long experience in their current subject have allowed stagnation of thought to develop. If this be the case, this has come about because until recently the technikons have not provided the stimulus of research as is the case in the universities. However, this particular conclusion would need further investigation to prove its validity.

5.1.2.2 Research:

With regard to research, the results indicated that there were no major differences in the information needs for lecturing and research, and that what differences there were, are similar to those found elsewhere(#4.2.6). For example, the need for monographic material was regarded as somewhat lower for research than for lecture preparation, while the need for journal

literature and conference proceedings was higher (loc. cit.). The importance of computerised abstract services for research was recognised (#4.2.4). What is of particular concern, however, is the low level of formal research taking place at the Cape Technikon (#4.1.1.6). It is of concern because of the increasing recognition being given to the place of research at technikons (e.g. Beukes 1984), and also because of the indications mentioned above that it may be leading to intellectual stagnation among lecturers in certain areas.

Finally, there were some indications that the applied nature of technikon lecturing and research had an influence on information needs (see, for example, #4.2.3, #4.2.5 and #4.2.6), but this would need to be tested further by a direct comparison between technikon and university lecturers before any final conclusions could be drawn in this respect.

5.2 EFFECTIVENESS OF THE LIBRARY

5.2.1 THE VALUE OF THE LIBRARY TO THE LECTURERS:

In contrast to many other surveys, this survey indicated that the Cape Technikon Library was regarded by the lecturers as a valuable source of information. In general, it was ranked as the most important place to find information (#4.2.2); and more than half of the lecturers used it at least 2 to 3 times a week (#4.3.2). For this reason, some of the questions which were couched in general terms may be regarded as primarily valid for the Cape Technikon Library; thus, it may be said that its current awareness service was considered useful (#4.2.1 and #4.3.4); its Subject Librarians

were consulted, in some cases on a par with consulting a colleague (#4.2.3); the Library was used systematically in preference to haphazard methods such as browsing (#4.2.3); the catalogue was regarded as an important citation source (#4.2.4); unlike the findings in some libraries, reference works were regarded as an important information source (#4.2.5). All of its information services were rated above average (#4.3.3), and provision of a number of channels as citation sources and as information sources were regarded as more than adequate for their needs (#4.3.4, #4.3.5, #4.3.6).

These findings confirm the principle that an information source which is easily accessible will be used in preference to a less accessible source, irrespective of the quality of that source. In the opinion of the writer, the Cape Technikon Library remains sub-standard in many respects, yet the lecturers make frequent use of it. However, the fact that lecturers use of the Library cannot be used as an excuse for complacency. Precisely because it IS the chief source of information for the lecturers, the Technikon is under obligation to ensure that it is the BEST source of information for their needs.

5.2.2 UNDER-UTILISED ASPECTS OF THE LIBRARY:

Certain aspects of the Library would appear to be under-utilised, probably because of ignorance of their availability or potential. This is particularly the case in the Library's ability to provide citations (#4.3.3), both through printed abstract and index journals and through computerised online retrieval services (#4.2.1 and #4.2.4). This resulted in a generally unsophisticated approach to literature searching (#4.3.4). In a sense, this finding is contradictory to the heavy demand from the lecturers for the most up to date literature (#4.2.7). On the one hand,

they are of the opinion that the Library is inadequate in providing the latest literature (#4.3.7), but on the other hand they are not using the resources within the Library to find such literature.

5.2.3 INADEQUATE ASPECTS OF THE LIBRARY:

Certain aspects of the Library are clearly deficient, making it inadequate to meet its users' information needs. These include provision of monographs, especially handbooks and manuals (#4.3.5 and #4.3.6); provision of conference proceedings (#4.3.4, #4.3.5 and #4.3.6); and provision of journal literature for citation retrieval and for research purposes (#4.3.4 and #4.3.6), aspects which should be given attention in future selection of material. Provision of study/work space was also regarded as inadequate(#4.3.3), an aspect which is known to be inadequate both in the quality of the work space provided and in the amount of space provided.

The lecturers regarded the library as particularly deficient in meeting their considerable need for the latest literature (#4.3.7); however, it should be pointed out that such a situation is largely of their own making in terms of current selection policy. At the time of writing, the initiative for the purchase of course-related material is supposed to come from the lecturers themselves, but in practice this often leads to inadequate and unbalanced collection building. The Library has attempted to overcome this problem by building up the reference section of the Library, and by recommending new publications through the subject librarians.

A matter for particular concern is the indication that those involved in research have been making extensive use of local university libraries (#4.2.2). This suggests that the Library is inadequate for research purposes.

5.3 RECOMMENDATIONS FOR THE FUTURE

Arising from the above conclusions, the following recommendations are made:

(1) The lecturers in the Engineering Sciences need to be stimulated to engage in more sophisticated literature use, and to become involved in formal research (#5.1.1.1). The Library should play a role in this by greater promotion of its services to this particular group.

(2) The Library must ensure that its stock and services in the Life Sciences area are maintained at the highest level possible, since the users in this area are the most exacting (#5.1.1.2).

(3) The term "Humanities Wing" currently being used at the Technikon is a misnomer, and consideration should be given to a more appropriate name, such as "Social Science Wing" or "Human Sciences Wing" (#5.1.1.3).

(4) The Library should provide comprehensive literature searching and current awareness services for lecturers who have had to change the subjects they are teaching (#5.1.2.1). Because of the considerable number of lecturers in this position, and because of the importance of this aspect in the academic programme at the Technikon a very high priority should be given to Library services in this area.

(5) Research needs to be encouraged in the Technikon, not only to provide intellectual stimulation for the lecturers, but also to provide a consultancy service to local commerce and industry, and to ensure the academic respectability of the Technikon as a tertiary institution. At the same time, the Library needs to upgrade its stock and services to a level where it can meet the information needs of Lecturers (and advanced students)

engaged in research (#5.1.2.2).

(6) Since the lecturers regard the Library as a valuable source of information in their lecturing and research work (#5.2.1), it must be adequately staffed and financed. As was suggested in #1.2, there is a danger of the Library becoming the means of actually preventing lecturers from providing sound and up to date tuition. This is particularly important at the time of writing, when the poor economic climate may tempt the Technikon's management to cut back on library services.

(7) Certain aspects such as its citation retrieval capabilities (#5.2.2) need promotion so that already existing resources can be adequately used.

(8) Certain aspects such as provision of work space, provision of handbooks, provision of conference proceedings and provision of some aspects of journal literature (#5.2.3) must be improved, as they are inadequate to meet the lecturers' information needs.

(9) The Library needs to give much closer attention to providing the latest literature as speedily as possible (#5.2.3). Consideration should therefore be given to collection building policies to ensure that suitable literature is acquired as soon as possible after publication. As suggested in #5.2.3, special attention should be given to the relationship between the roles of lecturers and subject librarians in the selection process.

Finally, it is not claimed that definitive answers have been provided to the original research questions. As was indicated in #1.3, previous knowledge of the information needs of technikon lecturers was virtually non-existent; what has been provided by this investigation is a foundation of formalised knowledge about the information needs of lecturers at a particular technikon, which can be used as a starting point for further research. Two important areas for such further research are:

(1) Whether the information needs of lecturers at the Cape Technikon are similar to those of lecturers at other technikons;

(2) The similarities or differences between the information needs of lecturers at technikons and the information needs of lecturers at universities; in particular, the extent to which the applied nature of technikon education influences information needs.

6. APPENDICES

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6.2 QUESTIONNAIRE ON THE INFORMATION NEEDS OF LECTURERS AT THE CAPE TECHNIKON

[Afrikaans keersy]

I N T R O D U C T I O N

Attached is a questionnaire on the information needs of lecturers at the Cape Technikon which is being distributed to all full time lecturers. It is part of a research project for a M.Bibl. thesis, but the results will also be invaluable to us in planning a library service for the Technikon which suit your specific needs.

I realise that you have a heavy work load, and that a questionnaire such as this only adds to the burden, but the questionnaire has intentionally been kept as short and as simple as possible. YOUR REPLY IS AN ESSENTIAL PART OF THE PROJECT, and should be seen as an investment in the future; any resulting improvements in the Cape Technikon Library Services will be of direct benefit to you and your students.

The questionnaire consists of 3 parts:

Section 1: Personal profile (note that you are not obliged to attach your name to the questionnaire - see the last paragraph below).

Section 2: Your information needs.

Section 3: Your opinion on the effectiveness of the Cape Technikon's Library Services.

Most of the questions require a simple rating on a 1 to 5 scale. As you may be aware, scales like these have problems such as a tendency to use the central positions to the exclusion of the extreme positions, and the tendency of previous replies to influence subsequent replies. You should therefore read right through the questionnaire first, then give your carefully considered reply to each question. In several sections you may want to show a relationship of one question to another, so the section should be viewed as a whole, but at the same time each individual question should be answered as objectively as possible.

A few of the questions may not be relevant (e.g. you may never need to use patents in your subject field), or you may be unable to answer a question for some other reason. In such a case, leave the rating blank, and write an explanatory note in the right hand margin.

N.B. Please answer ALL of the questions 1.2 to 1.8.

Certain terms used in the questionnaire may need clarification and some definitions are given here -

INFORMATION SOURCE - a source, such as a book or periodical, from which you extract information.

CITATION - a reference to an information source, i.e. it does not supply the information you need, but leads you to the information source.

CITATION SOURCE - a source, such as an abstract journal or bibliography, where you find citations

SUBJECT LIBRARIAN - a professional librarian with a working knowledge of your subject field.

If you have any queries on how to interpret any of the questions, please do not hesitate to telephone me at the Long Market Street building, extension 270.

Your reply should reach me by FRIDAY 26 JULY 1985.

Yours sincerely

A Kerkham
TechniKon Librarian

If you wish to reply anonymously, please complete the slip which is attached below, and return it separately from the questionnaire.

Cut Cut

I have forwarded the completed questionnaire under separate cover.

Name (Please print):.....

School:.....

QUESTIONNAIRE ON THE INFORMATION NEEDS OF LECTURERS AT THE CAPE TECHNIKON

1 ( )
2 ( )

SECTION 1 : PERSONAL PROFILE

1.1 Your name (Please print. Note: If you do not wish to attach your name, use the separate slip on the accompanying introduction)

.....

1.2 School in which you work .....

1.3 Department within the School to which you are attached .....

1.4 Subjects you teach (UNDERLINE YOUR MAIN SUBJECT, i.e. the one to which you devote most time)

.....

..... 3 ( )

1.5 Rank (Lecturer, Senior Lecturer, Head of Dept.) ..... 4 ( )

1.6 Highest academic qualification:

.....(M + ...) 5 ( )

1.7 How long have you been teaching? -

Altogether	..... years	6 ( )
Your main subject	..... years	7 ( )

1.8 Consider the time which you devote to your main subject, and indicate with an "X" the activity to which you give MOST time for that subject (mark one block only):

Preparation of new lecture notes	!__!1	
Revision of existing lecture notes and/or Keeping up to date with subject	!__!2	
Reasearch and/or curriculum / syllabus development	!__!3	8 ( )

SECTION 2 : INFORMATION NEEDS

This section seeks to assess the importance to you of various information needs and sources in your work as a lecturer engaged in teaching and research.

Indicate the IMPORTANCE you attach to each of the information needs or information sources listed below by marking an "X" on the scale. (Note: This is not an attempt to measure actual use of sources, but how important you regard them, for example, a computerised current awareness service may not be readily available to you but you may regard it as potentially very important).

Scale:
1 Not important
2 Slightly important
3 Moderately important
4 Very important
5 Extremely important

2.1 Current awareness

Indicate the importance to you of the following in keeping up to date in your subject:

	1 2 3 4 5	
Attending conferences, symposia, etc.	!_!_!_!_!_!	9 ( )
Discussion with colleagues within the Technikon	!_!_!_!_!_!	10 ( )
Discussion / correspondence with colleagues outside the Technikon	!_!_!_!_!_!	11 ( )
Scanning latest issues of journals	!_!_!_!_!_!	12 ( )
Scanning abstract / index journals	!_!_!_!_!_!	13 ( )
Reading review journals *	!_!_!_!_!_!	14 ( )
Using a computerised current awareness service	!_!_!_!_!_!	15 ( )
Using a library's current awareness service (e.g. the Technikon's Current Contents Bulletin)	!_!_!_!_!_!	16 ( )

* Examples of review journals are "Annual review of ...", "Advances in ...", "Chemical reviews", etc.

2.2 Places where information is found

Indicate the importance to you of each of the following places for finding information:

	1 2 3 4 5	
Cape Technikon Library Services	!_!_!_!_!_!	17 ( )
Local university libraries	!_!_!_!_!_!	18 ( )
Local public libraries	!_!_!_!_!_!	19 ( )
Own personal library	!_!_!_!_!_!	20 ( )
Colleagues' personal libraries	!_!_!_!_!_!	21 ( )
Research institutes (e.g. CSIR, HSRC)	!_!_!_!_!_!	22 ( )
Professional institutes	!_!_!_!_!_!	23 ( )
Trade associations	!_!_!_!_!_!	24 ( )
Industrial firms	!_!_!_!_!_!	25 ( )
Government departments	!_!_!_!_!_!	26 ( )

2.3 Methods of finding information

If you need to find information about a specific subject, indicate what importance you would attach to each of the following methods of tracking down the information you require:

	1 2 3 4 5	
Consult colleagues in the Technikon	!_!_!_!_!_!	27 ( )
Consult colleagues outside the Technikon	!_!_!_!_!_!	28 ( )
Consult Subject Librarian	!_!_!_!_!_!	29 ( )
Use abstract and index journals or services	!_!_!_!_!_!	30 ( )
Search through books or journal articles	!_!_!_!_!_!	31 ( )
A systematical search in a library (e.g. using the catalogue)	!_!_!_!_!_!	32 ( )
Browse in a library	!_!_!_!_!_!	33 ( )
Serendipity (come across information by chance)	!_!_!_!_!_!	34 ( )

2.4 Citation sources

Indicate the importance to you of each of the following sources as a means of providing citations. Citation sources are those which LEAD YOU TO the information or literature you require:

	1 2 3 4 5	
Books, monographs	!_!_!_!_!_!	35 ( )
Journal articles	!_!_!_!_!_!	36 ( )
Published conference proceedings	!_!_!_!_!_!	37 ( )
Printed abstracting & indexing journals	!_!_!_!_!_!	38 ( )
Computerised abstracting & indexing services	!_!_!_!_!_!	39 ( )
Review journals *	!_!_!_!_!_!	40 ( )
Library current awareness services	!_!_!_!_!_!	41 ( )
Bibliographies, literature surveys	!_!_!_!_!_!	42 ( )
Library catalogues	!_!_!_!_!_!	43 ( )

* Examples of review journals are "Annual review of ...", "Advances in ...", "Chemical reviews", etc.

2.5 Information sources for lecture preparation

Indicate the importance to you of each of the following information sources for PREPARATION OF LECTURES. Information sources are those which provide you with the ACTUAL information you require:

	1 2 3 4 5	
Reference works (encyclopaedias, dictionaries, directories)	!_!_!_!_!_!	44 ( )
Handbooks, manuals	!_!_!_!_!_!	45 ( )
Monographs, textbooks	!_!_!_!_!_!	46 ( )
Published conference proceedings	!_!_!_!_!_!	47 ( )
Standards and specifications	!_!_!_!_!_!	48 ( )
Patents	!_!_!_!_!_!	49 ( )
Trade literature	!_!_!_!_!_!	50 ( )
Journal articles	!_!_!_!_!_!	51 ( )
Newspapers	!_!_!_!_!_!	52 ( )

2.6 Information sources for research

Indicate the importance to you of each of the following information sources for RESEARCH PURPOSES (whether personal research, team or Technikon research). Information sources are those which provide you with the ACTUAL information you require:

	1 2 3 4 5	
Reference works (encyclopaedias, dictionaries, directories)	!_!_!_!_!_!	53 ( )
Handbooks, manuals	!_!_!_!_!_!	54 ( )
Monographs, textbooks	!_!_!_!_!_!	55 ( )
Published conference proceedings	!_!_!_!_!_!	56 ( )
Standards and specifications	!_!_!_!_!_!	57 ( )
Patents	!_!_!_!_!_!	58 ( )
Trade literature	!_!_!_!_!_!	59 ( )
Journal articles	!_!_!_!_!_!	60 ( )
Newspapers	!_!_!_!_!_!	61 ( )

2.7 Age of sources

Indicate the importance to you of information sources published -

	1 2 3 4 5	
within the past 2 years	!_!_!_!_!_!	62 ( )
3 - 10 years ago	!_!_!_!_!_!	63 ( )
more than 10 years ago	!_!_!_!_!_!	64 ( )

SECTION 3 : EFFECTIVENESS OF THE CAPE TECHNIKON LIBRARY

In this section you are asked to assess the effectiveness of the Cape Technikon Library Services in supplying various information needs and sources for your work as a lecturer engaged in teaching and research.

Indicate your assessment of the EFFECTIVENESS of the Library by marking an "X" on the scale. Try to be as objective as possible in your assessment. Do not under-scale because of a grudge against the Library or in an attempt to have the Library improved; do not over-scale to show your satisfaction.

Scale:
1 Not effective
2 Slightly effective
3 Moderately effective
4 Very effective
5 Extremely effective

3.1 Library Goals

As a user of the Cape Technikon Library Services, how would you rank these goals for the Library? Score them from 1 (least important), to 5 (most important):

Maximise the number of people using the Library	!__!	65 ( )
Maximise the satisfaction of people using the Library	!__!	66 ( )
Maximise the number of items produced by a search in the Library	!__!	67 ( )
Maximise the usefulness of items produced by a search in the Library	!__!	68 ( )
Minimise the amount of effort needed to use the Library	!__!	69 ( )

3.2 Library use

Indicate with an "X" how frequently (on average) you come into the Cape Technikon Library:

Less than once a semester	!__! 1	
Two or three times a semester	!__! 2	
Two or three times a month	!__! 3	
Two or three times a week	!__! 4	
More than once a day	!__! 5	70 ( )

3.3 Library services

Indicate the effectiveness of the Cape Technikon Library Services in supplying the following services:

	1 2 3 4 5	
Providing citations	!_!_!_!_!_!	71 ( )
Providing books, journals, etc. from its own stock	!_!_!_!_!_!	72 ( )
Providing items on interlibrary loan	!_!_!_!_!_!	73 ( )
Providing answers to specific queries	!_!_!_!_!_!	74 ( )
Providing current awareness	!_!_!_!_!_!	75 ( )
Providing facilities to enable you to find information yourself	!_!_!_!_!_!	76 ( )
Providing Subject Librarians to assist you find specialised information	!_!_!_!_!_!	77 ( )
Providing suitable study/work space	!_!_!_!_!_!	78 ( )

3.4 Citation sources

Indicate the effectiveness of the Cape Technikon Library Services in supplying you with each of the following sources as a means of providing citations. Citation sources are those which LEAD YOU TO the information or literature you require:

	1 2 3 4 5	
Books, monographs	!_!_!_!_!_!	79 ( )
Journal articles	!_!_!_!_!_!	80 ( )
Published conference proceedings	!_!_!_!_!_!	81 ( )
Printed abstracting & indexing journals	!_!_!_!_!_!	82 ( )
Computerised abstracting & indexing services	!_!_!_!_!_!	83 ( )
Review journals *	!_!_!_!_!_!	84 ( )
Library current awareness services	!_!_!_!_!_!	85 ( )
Bibliographies, literature surveys	!_!_!_!_!_!	86 ( )
Library catalogues	!_!_!_!_!_!	87 ( )

* Examples of review journals are "Annual review of ...", "Advances in ...", "Chemical reviews", etc.

3.5 Information sources for lecture preparation

Indicate the effectiveness of the Cape Technikon Library Services in supplying you with each of the following information sources for PREPARATION OF LECTURES. Information sources are those which provide you with the ACTUAL information you require:

	1 2 3 4 5	
Reference works (encyclopaedias, dictionaries, directories)	!_!_!_!_!_!	88 ( )
Handbooks, manuals	!_!_!_!_!_!	89 ( )
Monographs, textbooks	!_!_!_!_!_!	90 ( )
Published conference proceedings	!_!_!_!_!_!	91 ( )
Standards and specifications	!_!_!_!_!_!	92 ( )
Patents	!_!_!_!_!_!	93 ( )
Trade literature	!_!_!_!_!_!	94 ( )
Journal articles	!_!_!_!_!_!	95 ( )
Newspapers	!_!_!_!_!_!	96 ( )

3.6 Information sources for research

Indicate the effectiveness of the Cape Technikon Library Services in supplying you with each of the following information sources for RESEARCH PURPOSES (whether personal research, team or Technikon research). Information sources are those which provide you with the ACTUAL information you require:

	1 2 3 4 5	
Reference works (encyclopaedias, dictionaries, directories)	!_!_!_!_!_!	97 ( )
Handbooks, manuals	!_!_!_!_!_!	98 ( )
Monographs, textbooks	!_!_!_!_!_!	99 ( )
Published conference proceedings	!_!_!_!_!_!	100 ( )
Standards and specifications	!_!_!_!_!_!	101 ( )
Patents	!_!_!_!_!_!	102 ( )
Trade literature	!_!_!_!_!_!	103 ( )
Journal articles	!_!_!_!_!_!	104 ( )
Newspapers	!_!_!_!_!_!	105 ( )

3.7 Age of sources

Indicate the effectiveness of the Cape Technikon Library Services in supplying you with information sources published -

	1 2 3 4 5	
within the past 2 years	!_!_!_!_!_!	106 ( )
3 - 10 years ago	!_!_!_!_!_!	107 ( )
more than 10 years ago	!_!_!_!_!_!	108 ( )

6.3 SUMMARY OF VARIABLES IN THE QUESTIONNAIRE

Variable number

PERSONAL PROFILE

1	Case number (included to satisfy Datastar's index requirements - not used in the assessment of the responses)	
2	Language of reply ----------	English Afrikaans
3	Discipline ----------	Engineering sciences Life sciences Human sciences
4	Rank ----------	Lecturer Senior Lecturer Head of Department
5	Highest qualification ------	M+3 vertical M+4 vertical M+5 vertical M+6 vertical
6	Experience - total teaching	(0-5 years
7	Experience - main subject	(6-10 years (11+ years
8	Professional life cycle ---	Phase 1 - preparation of new lecture notes Phase 2 - revision of notes; keeping up to date Phase 3 - research; curriculum development

INFORMATION NEEDS

Current awareness

9 Attending conferences
10 Discussion with colleagues within Technikon
11 Discussion with colleagues outside Technikon
12 Scanning current journals
13 Scanning abstract/index journals
14 Reading review journals
15 Using computerised current awareness service
16 Using a library current awareness service

Places where information is found

17 Cape Technikon Library Services
18 Local university libraries
19 Local public libraries
20 Own personal library
21 Colleagues' personal libraries
22 Research institutes
23 Professional institutes
24 Trade associations
25 Industrial firms
26 Government departments

Methods of finding information

27 Consult colleagues in the Technikon
28 Consult colleagues outside the Technikon
29 Consult Subject Librarian
30 Use abstract/index journals or services
31 Search through books or journal articles
32 Systematic search in a library
33 Browse in a library
34 Serendipity

Citation sources

35 Books, monographs
36 Journal articles
37 Published conference proceedings
38 Printed abstract/index journals
39 Computerised abstract/index services
40 Review journals
41 Library current awareness services
42 Bibliographies, literature surveys
43 Library catalogues

Information sources for lecture preparation

44 Reference works
45 Handbooks, manuals
46 Monographs, textbooks
47 Published conference proceedings
48 Standards and specifications
49 Patents
50 Trade literature
51 Journal articles
52 Newspapers

Information sources for research

53 Reference works
54 Handbooks, manuals
55 Monographs, textbooks
56 Published conference proceedings
57 Standards and specifications
58 Patents
59 Trade literature
60 Journal articles
61 Newspapers

Age of sources - sources published -

62 Within past 2 years
63 3 - 10 years ago
64 More than 10 years ago

EFFECTIVENESS OF THE CAPE TECHNIKON LIBRARY

Library goals

65 Maximise number of users
66 Maximise satisfaction
67 Maximise recall
68 Maximise precision
69 Minimise effort

Library use

70 Less than once a semester
2 - 3 times a semester
2 - 3 times a month
2 - 3 times a week
More than once a day

Library services

71 Providing citations
72 Providing items from own stock
73 Providing items on interlibrary loan
74 Providing answers to queries
75 Providing current awareness
76 Providing facilities for search conducted by self
77 Providing Subject Librarians to assist in searching
78 Providing study/work space

Citation sources

79 Books, monographs
80 Journal articles
81 Published conference proceedings
82 Printed abstract/index journals
83 Computerised abstract/ index services
84 Review journals
85 Library current awareness services
86 Bibliographies, literature surveys
87 Library catalogues

Information sources for lecture preparation

88 Reference works
89 Handbooks, manuals
90 Monographs, textbooks
91 Published conference proceedings
92 Standards and specifications
93 Patents
94 Trade literature
95 Journal articles
96 Newspapers

Information sources for research

97 Reference works
98 Handbooks, manuals
99 Monographs, textbooks
100 Published conference proceedings
101 Standards and specifications
102 Patents
103 Trade literature
104 Journal articles
105 Newspapers

Age of sources - sources published -

106 Within past 2 years
107 3 - 10 years ago
108 More than 10 years ago

6.4 PROGRAM USED TO PROCESS THE RAW DATA

```
        REM     Read raw data from data file,
        REM     calculate frequencies and percentages and
        REM     write summary table to disk.
        REM     F(*)   = Field array for each case
        REM     X(*,*) = Summary data array

DIM F(108), X(108,6)

INPUT "Number ofindependent variable for selection? (<CR) for all)"; \
     LINE VARIABLE$

IF VARIABLE$ = "" THEN 1

INPUT "Value of variable for selection? "; VALUE

1  PRINT "Put disk with data file ""SURVEY.DAT"" in Drive B:"

INPUT "Name of table for output summary? "; LINE TITLE$

        REM     Open file

IF END #1 THEN 15
OPEN "B:SURVEY.DAT" AS 1

        REM     Read fields in record

10  FOR I = 1 TO 108
READ #1; F(I)
NEXT I

        REM     Select this record?

IF VARIABLE$ = "" THEN 11
VARIABLE = VAL(VARIABLE$)
IF F(VARIABLE) = VALUE THEN 11
GOTO 13

        REM     Count data

11  FOR I = 1 TO 108

                REM - Nonresponse in questions 9 - 64 are
                REM - taken as equivalent to "1"

        IF I < 9 OR I > 64 THEN 12
        IF F(I) = 0 THEN F(I) = 1

12  FOR J = 0 TO 5
IF F(I) = J THEN X(I,J) = X(I,J) + 1
NEXT J
NEXT I
N = N + 1
```

```
        REM     Get next record

13  N1 = N1 + 1
PRINT "RECORD NO"; N1; " READ"
GOTO 10

        REM     Process end of file

15  PRINT "END OF FILE"
CLOSE 1


        REM     Find end of text file

IF END #2 THEN 25
OPEN "SURVEY.TXT" AS 2
20 READ #2; FIELD$
GOTO 20


        REM     Print summary table to text file

25 PRINT "Summary table being written to disk"
PRINT TITLE$

PRINT #2; TITLE$
PRINT #2; ""
PRINT #2; "No of cases = ", N
PRINT #2; ""
PRINT #2; "Ques  No of     Number  of scores         Percentage of replies
   Weighted"
PRINT #2; " no  replies   0   1   2   3   4   5      0   1   2   3   4   5
   Average"
PRINT #2; "-----------------------------------------------------------------
----------"
N$ =      "###    ###   ### ### ### ### ### ###    ### ### ### ### ### ###
     #.#"

FOR I = 2 TO 108

N1 = N - X(I,0)          REM - Calculate number of replies

X0 = X(I,0)*100/N        REM - Calculate percentages
X1 = X(I,1)*100/N1
X2 = X(I,2)*100/N1
X3 = X(I,3)*100/N1
X4 = X(I,4)*100/N1
X5 = X(I,5)*100/N1
```

```
                    REM - Calculate weighed average

XA = ((1*X1) + (2*X2) + (3*X3) + (4*X4) + (5*X5)) / 100

PRINT USING N$; #2; I, N1, X(I,0), X(I,1), X(I,2), X(I,3), X(I,4), X(I,5),\
   X0, X1, X2, X3, X4, X5, XA
IF I = 52 THEN \
   PRINT #2; "" : \
   PRINT #2; "Item  No of      Number of scores          Percentage of replies
   Weighted" : \
   PRINT #2; " no  replies   0   1   2   3   4   5      0   1   2   3   4   5
   Average" : \
   PRINT #2; "-------------------------------------------------------------------
-----------"

NEXT I

CLOSE 2


        REM     Announce end

FOR I = 1 TO 10
PRINT CHR$(7)
NEXT I

PRINT "END"

END
```

6.5 PROGRAM USED FOR CHI-SQUARED TEST

```
        REM     Chi-squared test on frequency table.
        REM     O(*,*) = observed frequencies
        REM     E(*,*) = expected frequencies
        REM     Number of rows = R
        REM     Number of columns = C

1  PRINT CHR$(12)
PRINT "CHI-SQUARED TEST ON FREQUENCY TABLE"
PRINT "-----------------------------------"
PRINT
INPUT "Number of ROWS    in the table?"; R
INPUT "Number of COLUMNS in the table?"; C
PRINT

DIM O(R,C), E(R,C), R(R), C(C) : RESTORE

FOR I = 1 TO R
R(I) = 0
   FOR J = 1 TO C
   C(J) = 0
   O(I,J) = 0
   E(I,J) = 0
   NEXT J
NEXT I

K1 = 0 : N  = 0 : T  = 0 : T1 = 0
W  = 0 : W1 = 0 : W2 = 0 : X  = 0 : X2 = 0

        REM     Input data

PRINT "Enter the data :-"
PRINT

FOR I = 1 TO R
FOR J = 1 TO C
PRINT "   Row"; I; " Column"; J; " ="; : INPUT ""; O(I,J)
NEXT J
NEXT I
PRINT

        REM     Calculate table totals

FOR I = 1 TO R
T1 = 0
   FOR J = 1 TO C
   W    = O(I,J)
   T1   = T1 + W
   T    = T  + W       : REM - Grand total
   C(J) = C(J) + W     : REM - Column totals
   NEXT J
R(I) = T1              : REM - Row totals
NEXT I
```

```
        REM     Calculate expected values

FOR I = 1 TO R
W = R(I) / T

FOR J = 1 TO C
W1 = W * C(J)
E(I,J) = W1

IF W1 <= 5 THEN \
   PRINT "Small expected frequency at row " + STR$(I) + \
   " column " + STR$(J) + " = " + STR$(E(I,J)) : N = N + 1

NEXT J

NEXT I

IF N > R*C*0.2 THEN PRINT :\
   PRINT "More than 20% of the cells have small expected frequencies" :\
   PRINT "Results are unacceptable"

        REM     Calculate chi-squared statistic

X2 = 0
FOR I = 1 TO R

FOR J = 1 TO C
W1 = E(I,J)
W2 = O(I,J) - W1
W  = W2 * W2 / W1
X2 = X2 + W
NEXT J

NEXT I

K1 = (R-1) * (C-1)

        REM     Compare statistic with critical value

IF K1 > 100 THEN 20

FOR I = 1 TO K1
READ X
NEXT I

        REM     Critical values of the chi-squared distribution

DATA   3.841,  5.991,  7.815,  9.488, 11.070
DATA  12.592, 14.067, 15.507, 16.919, 18.307
DATA  19.675, 21.026, 22.362, 23.685, 24.996
DATA  26.296, 27.587, 28.869, 30.144, 31.410
DATA  32.670, 33.924, 35.172, 36.415, 37.652
DATA  38.885, 40.113, 41.337, 42.557, 43.773
DATA  44.985, 46.194, 47.400, 48.602, 49.802
DATA  50.998, 52.192, 53.384, 54.572, 55.758
```

```
DATA  56.942, 58.124, 59.304, 60.481, 61.656
DATA  62.830, 64.001, 65.171, 66.339, 67.505
DATA  68.669, 69.832, 70.993, 72.153, 73.311
DATA  74.468, 75.624, 76.778, 77.931, 79.082
DATA  80.232, 81.381, 82.529, 83.675, 84.821
DATA  85.965, 87.108, 88.250, 89.391, 90.531
DATA  91.670, 92.808, 93.945, 95.081, 96.217
DATA  97.351, 98.484, 99.617, 100.75, 101.88
DATA  103.01, 104.14, 105.27, 106.39, 107.52
DATA  108.65, 109.77, 110.90, 112.02, 113.15
DATA  114.27, 115.39, 116.51, 117.63, 118.75
DATA  119.87, 120.99, 122.11, 123.23, 124.34

GOTO 30

20  X = 0.5 * (1.6449 + SQR(2*K1-1))^2

        REM     Print final result

30  PRINT
PRINT "Chi-squared statistic      = " + STR$(X2)
PRINT "Chi-squared critical value = " + STR$(X)
PRINT "Degrees of freedom         = " + STR$(K1)
PRINT

IF X2 > X THEN \
   PRINT "The chi-squared statistic exceeds the critical value " : \
   PRINT "at the 5% level.  The null hypothesis is therefore rejected" : \
   GOTO 40

PRINT "The chi-squared statistic does not exceed the critical value" : \
PRINT "at the 5% level.  The null hypothesis is therefore supported"

40 PRINT
INPUT "Run another test? - <CR> for yes, any other for no"; LINE A$
IF A$ <> "" THEN 50

GOTO 1

50  END
```

TABLE 1 : ALL RESPONDENTS

No of cases = 206

Ques no	No of replies	Number of scores						Percentage of replies						Weighted Average
		0	1	2	3	4	5	0	1	2	3	4	5	
2	206	0	100	106	0	0	0	0	49	51	0	0	0	1.5
3	206	0	75	44	87	0	0	0	36	21	42	0	0	2.1
4	206	0	121	55	30	0	0	0	59	27	15	0	0	1.6
5	206	0	103	71	31	1	0	0	50	34	15	0	0	1.7
6	206	0	76	53	77	0	0	0	37	26	37	0	0	2.0
7	206	0	108	54	44	0	0	0	52	26	21	0	0	1.7
8	205	1	67	118	20	0	0	0	33	58	10	0	0	1.8
9	206	0	16	22	52	70	46	0	8	11	25	34	22	3.5
10	206	0	7	19	45	81	54	0	3	9	22	39	26	3.8
11	206	0	18	29	61	72	26	0	9	14	30	35	13	3.3
12	206	0	5	12	31	89	69	0	2	6	15	43	33	4.0
13	206	0	35	39	61	48	23	0	17	19	30	23	11	2.9
14	206	0	24	29	60	56	37	0	12	14	29	27	18	3.3
15	206	0	50	34	54	37	31	0	24	17	26	18	15	2.8
16	206	0	22	20	60	75	29	0	11	10	29	36	14	3.3
17	206	0	3	4	29	49	121	0	1	2	14	24	59	4.4
18	206	0	34	35	51	46	40	0	17	17	25	22	19	3.1
19	206	0	60	48	57	32	9	0	29	23	28	16	4	2.4
20	206	0	11	17	37	71	70	0	5	8	18	34	34	3.8
21	206	0	57	47	52	39	11	0	28	23	25	19	5	2.5
22	206	0	67	28	48	39	24	0	33	14	23	19	12	2.6
23	206	0	55	35	44	43	29	0	27	17	21	21	14	2.8
24	206	0	101	38	39	18	10	0	49	18	19	9	5	2.0
25	206	0	71	31	49	39	16	0	34	15	24	19	8	2.5
26	206	0	99	35	38	26	8	0	48	17	18	13	4	2.1
27	206	0	19	26	43	65	53	0	9	13	21	32	26	3.5
28	206	0	24	37	50	59	36	0	12	18	24	29	17	3.2
29	206	0	34	28	42	55	47	0	17	14	20	27	23	3.3
30	206	0	41	33	44	52	36	0	20	16	21	25	17	3.0
31	206	0	14	19	47	69	57	0	7	9	23	33	28	3.7
32	206	0	21	19	32	73	61	0	10	9	16	35	30	3.7
33	206	0	50	55	61	27	13	0	24	27	30	13	6	2.5
34	206	0	113	47	33	8	5	0	55	23	16	4	2	1.8
35	206	0	15	23	56	63	49	0	7	11	27	31	24	3.5
36	206	0	13	24	53	64	52	0	6	12	26	31	25	3.6
37	206	0	54	36	51	39	26	0	26	17	25	19	13	2.7
38	206	0	45	48	52	32	29	0	22	23	25	16	14	2.8
39	206	0	64	47	36	28	31	0	31	23	17	14	15	2.6
40	206	0	39	41	53	46	27	0	19	20	26	22	13	2.9
41	206	0	31	34	60	53	28	0	15	17	29	26	14	3.1
42	206	0	75	48	41	28	14	0	36	23	20	14	7	2.3
43	206	0	29	28	35	70	44	0	14	14	17	34	21	3.3
44	206	0	32	38	54	41	41	0	16	18	26	20	20	3.1
45	206	0	3	9	16	49	129	0	1	4	8	24	63	4.4
46	206	0	13	19	35	60	79	0	6	9	17	29	38	3.8
47	206	0	47	46	63	32	18	0	23	22	31	16	9	2.7
48	206	0	68	37	44	31	26	0	33	18	21	15	13	2.6
49	206	0	152	28	19	6	1	0	74	14	9	3	0	1.4
50	206	0	65	31	49	37	24	0	32	15	24	18	12	2.6
51	206	0	23	23	56	60	44	0	11	11	27	29	21	3.4
52	206	0	90	39	36	23	18	0	44	19	17	11	9	2.2

Ques no	No of replies	Number of scores						Percentage of replies						Weighted Average
		0	1	2	3	4	5	0	1	2	3	4	5	
53	206	0	44	29	41	43	49	0	21	14	20	21	24	3.1
54	206	0	22	11	25	63	85	0	11	5	12	31	41	3.9
55	206	0	29	16	42	55	64	0	14	8	20	27	31	3.5
56	206	0	41	20	51	44	50	0	20	10	25	21	24	3.2
57	206	0	74	33	43	27	29	0	36	16	21	13	14	2.5
58	206	0	137	22	29	13	5	0	67	11	14	6	2	1.7
59	206	0	69	35	34	33	35	0	33	17	17	16	17	2.7
60	206	0	29	12	34	64	67	0	14	6	17	31	33	3.6
61	206	0	97	27	39	29	14	0	47	13	19	14	7	2.2
62	206	0	3	1	5	30	167	0	1	0	2	15	81	4.7
63	206	0	12	19	71	73	31	0	6	9	34	35	15	3.4
64	206	0	85	42	52	18	9	0	41	20	25	9	4	2.1
65	200	6	85	28	17	32	38	3	43	14	9	16	19	2.6
66	200	6	18	38	42	40	62	3	9	19	21	20	31	3.5
67	200	6	25	55	43	41	36	3	13	28	22	21	18	3.0
68	200	6	29	29	51	53	38	3	15	15	26	27	19	3.2
69	200	6	43	50	47	34	26	3	22	25	24	17	13	2.8
70	203	3	0	13	67	112	11	1	0	6	33	55	5	3.6
71	168	38	7	25	81	48	7	18	4	15	48	29	4	3.1
72	203	3	4	16	66	84	33	1	2	8	33	41	16	3.6
73	170	36	6	19	42	63	40	17	4	11	25	37	24	3.7
74	185	21	9	24	61	65	26	10	5	13	33	35	14	3.4
75	188	18	12	24	80	61	11	9	6	13	43	32	6	3.2
76	198	8	6	20	62	89	21	4	3	10	31	45	11	3.5
77	191	15	16	29	48	66	32	7	8	15	25	35	17	3.4
78	196	10	50	43	57	36	10	5	26	22	29	18	5	2.6
79	175	31	6	15	69	64	21	15	3	9	39	37	12	3.5
80	176	30	7	26	52	67	24	15	4	15	30	38	14	3.4
81	155	51	31	50	47	21	6	25	20	32	30	14	4	2.5
82	163	43	21	40	60	34	8	21	13	25	37	21	5	2.8
83	141	65	40	32	44	20	5	32	28	23	31	14	4	2.4
84	162	44	17	33	64	35	13	21	10	20	40	22	8	3.0
85	164	42	13	33	65	38	15	20	8	20	40	23	9	3.1
86	151	55	30	33	58	26	4	27	20	22	38	17	3	2.6
87	168	38	10	21	48	58	31	18	6	13	29	35	18	3.5
88	192	14	12	21	63	67	29	7	6	11	33	35	15	3.4
89	196	10	3	20	49	76	48	5	2	10	25	39	24	3.7
90	191	15	4	19	54	74	40	7	2	10	28	39	21	3.7
91	167	39	37	53	59	9	9	19	22	32	35	5	5	2.4
92	154	52	41	26	57	19	11	25	27	17	37	12	7	2.6
93	123	83	67	27	22	4	3	40	54	22	18	3	2	1.8
94	163	43	29	29	51	41	13	21	18	18	31	25	8	2.9
95	184	22	10	17	58	68	31	11	5	9	32	37	17	3.5
96	164	42	33	21	33	48	29	20	20	13	20	29	18	3.1
97	170	36	13	18	57	61	21	17	8	11	34	36	12	3.3
98	175	31	3	27	68	50	27	15	2	15	39	29	15	3.4
99	172	34	11	27	65	45	24	17	6	16	38	26	14	3.3
100	156	50	41	50	42	15	8	24	26	32	27	10	5	2.4
101	139	67	40	28	45	17	9	33	29	20	32	12	6	2.5
102	121	85	59	30	23	6	3	41	49	25	19	5	2	1.9
103	146	60	31	28	42	35	10	29	21	19	29	24	7	2.8
104	164	42	15	12	56	53	28	20	9	7	34	32	17	3.4
105	145	61	36	16	40	35	18	30	25	11	28	24	12	2.9
106	184	22	7	29	50	68	30	11	4	16	27	37	16	3.5
107	179	27	5	22	72	65	15	13	3	12	40	36	8	3.4
108	156	50	25	32	54	34	11	24	16	21	35	22	7	2.8

TABLE 2 : RESPONDENTS BY LANGUAGE : ENGLISH

No of cases = 100

Ques no	No of replies	Number of scores						Percentage of replies						Weighted Average
		0	1	2	3	4	5	0	1	2	3	4	5	
2	100	0	100	0	0	0	0	0	100	0	0	0	0	1.0
3	100	0	45	19	36	0	0	0	45	19	36	0	0	1.9
4	100	0	62	24	14	0	0	0	62	24	14	0	0	1.5
5	100	0	56	34	9	1	0	0	56	34	9	1	0	1.6
6	100	0	29	30	41	0	0	0	29	30	41	0	0	2.1
7	100	0	51	27	22	0	0	0	51	27	22	0	0	1.7
8	100	0	26	66	8	0	0	0	26	66	8	0	0	1.8
9	100	0	9	11	24	36	20	0	9	11	24	36	20	3.5
10	100	0	2	12	20	46	20	0	2	12	20	46	20	3.7
11	100	0	10	16	27	33	14	0	10	16	27	33	14	3.3
12	100	0	4	6	17	40	33	0	4	6	17	40	33	3.9
13	100	0	22	20	24	24	10	0	22	20	24	24	10	2.8
14	100	0	17	15	28	24	16	0	17	15	28	24	16	3.1
15	100	0	30	17	20	18	15	0	30	17	20	18	15	2.7
16	100	0	11	12	34	32	11	0	11	12	34	32	11	3.2
17	100	0	1	3	10	35	51	0	1	3	10	35	51	4.3
18	100	0	19	19	26	19	17	0	19	19	26	19	17	3.0
19	100	0	24	27	28	16	5	0	24	27	28	16	5	2.5
20	100	0	4	9	17	35	35	0	4	9	17	35	35	3.9
21	100	0	30	22	28	15	5	0	30	22	28	15	5	2.4
22	100	0	40	15	24	12	9	0	40	15	24	12	9	2.4
23	100	0	34	16	18	23	9	0	34	16	18	23	9	2.6
24	100	0	48	22	16	9	5	0	48	22	16	9	5	2.0
25	100	0	35	15	24	19	7	0	35	15	24	19	7	2.5
26	100	0	54	18	13	12	3	0	54	18	13	12	3	1.9
27	100	0	8	13	19	38	22	0	8	13	19	38	22	3.5
28	100	0	13	16	22	31	18	0	13	16	22	31	18	3.3
29	100	0	20	18	16	24	22	0	20	18	16	24	22	3.1
30	100	0	23	16	18	25	18	0	23	16	18	25	18	3.0
31	100	0	8	8	24	32	28	0	8	8	24	32	28	3.6
32	100	0	13	10	14	34	29	0	13	10	14	34	29	3.6
33	100	0	21	28	30	16	5	0	21	28	30	16	5	2.6
34	100	0	55	24	14	3	4	0	55	24	14	3	4	1.8
35	100	0	12	10	33	25	20	0	12	10	33	25	20	3.3
36	100	0	9	12	28	31	20	0	9	12	28	31	20	3.4
37	100	0	33	17	25	15	10	0	33	17	25	15	10	2.5
38	100	0	25	26	20	16	13	0	25	26	20	16	13	2.7
39	100	0	37	20	13	13	17	0	37	20	13	13	17	2.5
40	100	0	24	17	22	24	13	0	24	17	22	24	13	2.9
41	100	0	20	18	25	24	13	0	20	18	25	24	13	2.9
42	100	0	29	26	19	18	8	0	29	26	19	18	8	2.5
43	100	0	18	14	16	34	18	0	18	14	16	34	18	3.2
44	100	0	16	17	29	19	19	0	16	17	29	19	19	3.1
45	100	0	3	8	9	30	50	0	3	8	9	30	50	4.2
46	100	0	3	2	9	35	51	0	3	2	9	35	51	4.3
47	100	0	25	25	30	12	8	0	25	25	30	12	8	2.5
48	100	0	35	19	24	14	8	0	35	19	24	14	8	2.4
49	100	0	73	18	8	1	0	0	73	18	8	1	0	1.4
50	100	0	31	16	28	15	10	0	31	16	28	15	10	2.6
51	100	0	12	12	30	31	15	0	12	12	30	31	15	3.3
52	100	0	49	21	14	9	7	0	49	21	14	9	7	2.0

Ques no	No of replies	Number of scores						Percentage of replies						Weighted Average
		0	1	2	3	4	5	0	1	2	3	4	5	
53	100	0	26	16	19	19	20	0	26	16	19	19	20	2.9
54	100	0	15	10	13	33	29	0	15	10	13	33	29	3.5
55	100	0	14	7	12	33	34	0	14	7	12	33	34	3.7
56	100	0	22	10	25	16	27	0	22	10	25	16	27	3.2
57	100	0	44	17	20	9	10	0	44	17	20	9	10	2.2
58	100	0	69	11	10	6	4	0	69	11	10	6	4	1.7
59	100	0	32	22	14	20	12	0	32	22	14	20	12	2.6
60	100	0	17	6	14	35	28	0	17	6	14	35	28	3.5
61	100	0	53	15	17	11	4	0	53	15	17	11	4	2.0
62	100	0	2	1	4	17	76	0	2	1	4	17	76	4.6
63	100	0	5	13	32	34	16	0	5	13	32	34	16	3.4
64	100	0	37	28	20	8	7	0	37	28	20	8	7	2.2
65	97	3	39	17	9	16	16	3	40	18	9	16	16	2.5
66	97	3	9	18	12	19	39	3	9	19	12	20	40	3.6
67	97	3	16	27	22	19	13	3	16	28	23	20	13	2.9
68	97	3	15	12	26	25	19	3	15	12	27	26	20	3.2
69	97	3	18	23	28	18	10	3	19	24	29	19	10	2.8
70	99	1	0	5	32	53	9	1	0	5	32	54	9	3.7
71	74	26	3	16	36	17	2	26	4	22	49	23	3	3.0
72	98	2	1	7	30	43	17	2	1	7	31	44	17	3.7
73	78	22	3	11	19	28	17	22	4	14	24	36	22	3.6
74	87	13	5	12	23	37	10	13	6	14	26	43	11	3.4
75	91	9	5	15	35	30	6	9	5	16	38	33	7	3.2
76	97	3	2	8	29	47	11	3	2	8	30	48	11	3.6
77	89	11	8	12	23	33	13	11	9	13	26	37	15	3.3
78	94	6	23	21	31	17	2	6	24	22	33	18	2	2.5
79	80	20	2	5	34	31	8	20	3	6	43	39	10	3.5
80	81	19	5	11	24	33	8	19	6	14	30	41	10	3.3
81	68	32	15	21	22	7	3	32	22	31	32	10	4	2.4
82	73	27	14	19	19	18	3	27	19	26	26	25	4	2.7
83	62	38	19	15	17	11	0	38	31	24	27	18	0	2.3
84	71	29	10	18	27	13	3	29	14	25	38	18	4	2.7
85	74	26	3	17	27	17	10	26	4	23	36	23	14	3.2
86	69	31	11	15	27	14	2	31	16	22	39	20	3	2.7
87	77	23	3	10	15	34	15	23	4	13	19	44	19	3.6
88	91	9	9	9	26	34	13	9	10	10	29	37	14	3.4
89	92	8	0	9	23	44	16	8	0	10	25	48	17	3.7
90	95	5	0	5	19	49	22	5	0	5	20	52	23	3.9
91	78	22	18	26	24	5	5	22	23	33	31	6	6	2.4
92	73	27	24	11	24	10	4	27	33	15	33	14	5	2.4
93	56	44	34	12	8	1	1	44	61	21	14	2	2	1.6
94	74	26	15	15	24	14	6	26	20	20	32	19	8	2.7
95	85	15	5	10	21	37	12	15	6	12	25	44	14	3.5
96	74	26	21	11	13	19	10	26	28	15	18	26	14	2.8
97	76	24	7	6	28	26	9	24	9	8	37	34	12	3.3
98	80	20	1	13	34	22	10	20	1	16	43	28	13	3.3
99	80	20	1	10	30	25	14	20	1	13	38	31	18	3.5
100	69	31	20	25	13	6	5	31	29	36	19	9	7	2.3
101	61	39	26	11	15	6	3	39	43	18	25	10	5	2.2
102	55	45	32	11	8	2	2	45	58	20	15	4	4	1.7
103	64	36	17	13	20	10	4	36	27	20	31	16	6	2.5
104	72	28	11	4	15	30	12	28	15	6	21	42	17	3.4
105	61	39	22	6	15	12	6	39	36	10	25	20	10	2.6
106	86	14	1	10	24	35	16	14	1	12	28	41	19	3.6
107	83	17	3	10	33	29	8	17	4	12	40	35	10	3.3
108	70	30	11	12	30	12	5	30	16	17	43	17	7	2.8

TABLE 3 : RESPONDENTS BY LANGUAGE : AFRIKAANS

No of cases = 106

Ques no	No of replies	Number of scores						Percentage of replies						Weighted Average
		0	1	2	3	4	5	0	1	2	3	4	5	
2	106	0	0	106	0	0	0	0	0	100	0	0	0	2.0
3	106	0	30	25	51	0	0	0	28	24	48	0	0	2.2
4	106	0	59	31	16	0	0	0	56	29	15	0	0	1.6
5	106	0	47	37	22	0	0	0	44	35	21	0	0	1.8
6	106	0	47	23	36	0	0	0	44	22	34	0	0	1.9
7	106	0	57	27	22	0	0	0	54	25	21	0	0	1.7
8	105	1	41	52	12	0	0	1	39	50	11	0	0	1.7
9	106	0	7	11	28	34	26	0	7	10	26	32	25	3.6
10	106	0	5	7	25	35	34	0	5	7	24	33	32	3.8
11	106	0	8	13	34	39	12	0	8	12	32	37	11	3.3
12	106	0	1	6	14	49	36	0	1	6	13	46	34	4.1
13	106	0	13	19	37	24	13	0	12	18	35	23	12	3.0
14	106	0	7	14	32	32	21	0	7	13	30	30	20	3.4
15	106	0	20	17	34	19	16	0	19	16	32	18	15	2.9
16	106	0	11	8	26	43	18	0	10	8	25	41	17	3.5
17	106	0	2	1	19	14	70	0	2	1	18	13	66	4.4
18	106	0	15	16	25	27	23	0	14	15	24	25	22	3.3
19	106	0	36	21	29	16	4	0	34	20	27	15	4	2.3
20	106	0	7	8	20	36	35	0	7	8	19	34	33	3.8
21	106	0	27	25	24	24	6	0	25	24	23	23	6	2.6
22	106	0	27	13	24	27	15	0	25	12	23	25	14	2.9
23	106	0	21	19	26	20	20	0	20	18	25	19	19	3.0
24	106	0	53	16	23	9	5	0	50	15	22	8	5	2.0
25	106	0	36	16	25	20	9	0	34	15	24	19	8	2.5
26	106	0	45	17	25	14	5	0	42	16	24	13	5	2.2
27	106	0	11	13	24	27	31	0	10	12	23	25	29	3.5
28	106	0	11	21	28	28	18	0	10	20	26	26	17	3.2
29	106	0	14	10	26	31	25	0	13	9	25	29	24	3.4
30	106	0	18	17	26	27	18	0	17	16	25	25	17	3.1
31	106	0	6	11	23	37	29	0	6	10	22	35	27	3.7
32	106	0	8	9	18	39	32	0	8	8	17	37	30	3.7
33	106	0	29	27	31	11	8	0	27	25	29	10	8	2.5
34	106	0	58	23	19	5	1	0	55	22	18	5	1	1.8
35	106	0	3	13	23	38	29	0	3	12	22	36	27	3.7
36	106	0	4	12	25	33	32	0	4	11	24	31	30	3.7
37	106	0	21	19	26	24	16	0	20	18	25	23	15	3.0
38	106	0	20	22	32	16	16	0	19	21	30	15	15	2.9
39	106	0	27	27	23	15	14	0	25	25	22	14	13	2.6
40	106	0	15	24	31	22	14	0	14	23	29	21	13	3.0
41	106	0	11	16	35	29	15	0	10	15	33	27	14	3.2
42	106	0	46	22	22	10	6	0	43	21	21	9	6	2.1
43	106	0	11	14	19	36	26	0	10	13	18	34	25	3.5
44	106	0	16	21	25	22	22	0	15	20	24	21	21	3.1
45	106	0	0	1	7	19	79	0	0	1	7	18	75	4.7
46	106	0	10	17	26	25	28	0	9	16	25	24	26	3.4
47	106	0	22	21	33	20	10	0	21	20	31	19	9	2.8
48	106	0	33	18	20	17	18	0	31	17	19	16	17	2.7
49	106	0	79	10	11	5	1	0	75	9	10	5	1	1.5
50	106	0	34	15	21	22	14	0	32	14	20	21	13	2.7
51	106	0	11	11	26	29	29	0	10	10	25	27	27	3.5
52	106	0	41	18	22	14	11	0	39	17	21	13	10	2.4

Ques no	No of replies	Number of scores						Percentage of replies						Weighted Average
		0	1	2	3	4	5	0	1	2	3	4	5	
53	106	0	18	13	22	24	29	0	17	12	21	23	27	3.3
54	106	0	7	1	12	30	56	0	7	1	11	28	53	4.2
55	106	0	15	9	30	22	30	0	14	8	28	21	28	3.4
56	106	0	19	10	26	28	23	0	18	9	25	26	22	3.2
57	106	0	30	16	23	18	19	0	28	15	22	17	18	2.8
58	106	0	68	11	19	7	1	0	64	10	18	7	1	1.7
59	106	0	37	13	20	13	23	0	35	12	19	12	22	2.7
60	106	0	12	6	20	29	39	0	11	6	19	27	37	3.7
61	106	0	44	12	22	18	10	0	42	11	21	17	9	2.4
62	106	0	1	0	1	13	91	0	1	0	1	12	86	4.8
63	106	0	7	6	39	39	15	0	7	6	37	37	14	3.5
64	106	0	48	14	32	10	2	0	45	13	30	9	2	2.1
65	103	3	46	11	8	16	22	3	45	11	8	16	21	2.6
66	103	3	9	20	30	21	23	3	9	19	29	20	22	3.3
67	103	3	9	28	21	22	23	3	9	27	20	21	22	3.2
68	103	3	14	17	25	28	19	3	14	17	24	27	18	3.2
69	103	3	25	27	19	16	16	3	24	26	18	16	16	2.7
70	104	2	0	8	35	59	2	2	0	8	34	57	2	3.5
71	94	12	4	9	45	31	5	11	4	10	48	33	5	3.3
72	105	1	3	9	36	41	16	1	3	9	34	39	15	3.6
73	92	14	3	8	23	35	23	13	3	9	25	38	25	3.7
74	98	8	4	12	38	28	16	8	4	12	39	29	16	3.4
75	97	9	7	9	45	31	5	8	7	9	46	32	5	3.2
76	101	5	4	12	33	42	10	5	4	12	33	42	10	3.4
77	102	4	8	17	25	33	19	4	8	17	25	32	19	3.4
78	102	4	27	22	26	19	8	4	26	22	25	19	8	2.6
79	95	11	4	10	35	33	13	10	4	11	37	35	14	3.4
80	95	11	2	15	28	34	16	10	2	16	29	36	17	3.5
81	87	19	16	29	25	14	3	18	18	33	29	16	3	2.5
82	90	16	7	21	41	16	5	15	8	23	46	18	6	2.9
83	79	27	21	17	27	9	5	25	27	22	34	11	6	2.5
84	91	15	7	15	37	22	10	14	8	16	41	24	11	3.1
85	90	16	10	16	38	21	5	15	11	18	42	23	6	2.9
86	82	24	19	18	31	12	2	23	23	22	38	15	2	2.5
87	91	15	7	11	33	24	16	14	8	12	36	26	18	3.3
88	101	5	3	12	37	33	16	5	3	12	37	33	16	3.5
89	104	2	3	11	26	32	32	2	3	11	25	31	31	3.8
90	96	10	4	14	35	25	18	9	4	15	36	26	19	3.4
91	89	17	19	27	35	4	4	16	21	30	39	4	4	2.4
92	81	25	17	15	33	9	7	24	21	19	41	11	9	2.7
93	67	39	33	15	14	3	2	37	49	22	21	4	3	1.9
94	89	17	14	14	27	27	7	16	16	16	30	30	8	3.0
95	99	7	5	7	37	31	19	7	5	7	37	31	19	3.5
96	90	16	12	10	20	29	19	15	13	11	22	32	21	3.4
97	94	12	6	12	29	35	12	11	6	13	31	37	13	3.4
98	95	11	2	14	34	28	17	10	2	15	36	29	18	3.5
99	92	14	10	17	35	20	10	13	11	18	38	22	11	3.0
100	87	19	21	25	29	9	3	18	24	29	33	10	3	2.4
101	78	28	14	17	30	11	6	26	18	22	38	14	8	2.7
102	66	40	27	19	15	4	1	38	41	29	23	6	2	2.0
103	82	24	14	15	22	25	6	23	17	18	27	30	7	2.9
104	92	14	4	8	41	23	16	13	4	9	45	25	17	3.4
105	84	22	14	10	25	23	12	21	17	12	30	27	14	3.1
106	98	8	6	19	26	33	14	8	6	19	27	34	14	3.3
107	96	10	2	12	39	36	7	9	2	13	41	38	7	3.4
108	86	20	14	20	24	22	6	19	16	23	28	26	7	2.8

TABLE 4 : RESPONDENTS BY DISCIPLINE : ENGINEERING SCIENCES

No of cases = 75

Ques no	No of replies	Number of scores						Percentage of replies						Weighted Average
		0	1	2	3	4	5	0	1	2	3	4	5	
2	75	0	45	30	0	0	0	0	60	40	0	0	0	1.4
3	75	0	75	0	0	0	0	0	100	0	0	0	0	1.0
4	75	0	40	23	12	0	0	0	53	31	16	0	0	1.6
5	75	0	46	24	5	0	0	0	61	32	7	0	0	1.5
6	75	0	21	17	37	0	0	0	28	23	49	0	0	2.2
7	75	0	33	24	18	0	0	0	44	32	24	0	0	1.8
8	75	0	19	56	0	0	0	0	25	75	0	0	0	1.7
9	75	0	10	13	20	21	11	0	13	17	27	28	15	3.1
10	75	0	0	9	11	35	20	0	0	12	15	47	27	3.9
11	75	0	14	13	18	27	3	0	19	17	24	36	4	2.9
12	75	0	3	9	14	33	16	0	4	12	19	44	21	3.7
13	75	0	18	18	22	13	4	0	24	24	29	17	5	2.6
14	75	0	17	13	24	12	9	0	23	17	32	16	12	2.8
15	75	0	22	10	21	14	8	0	29	13	28	19	11	2.7
16	75	0	9	9	23	28	6	0	12	12	31	37	8	3.2
17	75	0	1	2	8	21	43	0	1	3	11	28	57	4.4
18	75	0	20	16	18	11	10	0	27	21	24	15	13	2.7
19	75	0	21	23	18	11	2	0	28	31	24	15	3	2.3
20	75	0	3	7	17	22	26	0	4	9	23	29	35	3.8
21	75	0	22	19	19	14	1	0	29	25	25	19	1	2.4
22	75	0	25	8	19	15	8	0	33	11	25	20	11	2.6
23	75	0	26	15	12	17	5	0	35	20	16	23	7	2.5
24	75	0	46	13	11	3	2	0	61	17	15	4	3	1.7
25	75	0	26	11	16	13	9	0	35	15	21	17	12	2.6
26	75	0	39	14	9	11	2	0	52	19	12	15	3	2.0
27	75	0	4	9	11	33	18	0	5	12	15	44	24	3.7
28	75	0	12	19	20	15	9	0	16	25	27	20	12	2.9
29	75	0	17	11	15	18	14	0	23	15	20	24	19	3.0
30	75	0	16	18	18	17	6	0	21	24	24	23	8	2.7
31	75	0	7	5	17	27	19	0	9	7	23	36	25	3.6
32	75	0	12	4	9	25	25	0	16	5	12	33	33	3.6
33	75	0	15	23	21	13	3	0	20	31	28	17	4	2.5
34	75	0	48	15	7	4	1	0	64	20	9	5	1	1.6
35	75	0	11	11	18	23	12	0	15	15	24	31	16	3.2
36	75	0	9	13	22	21	10	0	12	17	29	28	13	3.1
37	75	0	22	16	19	10	8	0	29	21	25	13	11	2.5
38	75	0	23	22	17	6	7	0	31	29	23	8	9	2.4
39	75	0	32	18	12	4	9	0	43	24	16	5	12	2.2
40	75	0	22	19	17	10	7	0	29	25	23	13	9	2.5
41	75	0	15	10	25	15	10	0	20	13	33	20	13	2.9
42	75	0	38	13	12	8	4	0	51	17	16	11	5	2.0
43	75	0	13	11	17	20	14	0	17	15	23	27	19	3.1
44	75	0	9	16	19	14	17	0	12	21	25	19	23	3.2
45	75	0	1	4	8	18	44	0	1	5	11	24	59	4.3
46	75	0	4	8	9	29	25	0	5	11	12	39	33	3.8
47	75	0	23	20	20	8	4	0	31	27	27	11	5	2.3
48	75	0	18	13	19	14	11	0	24	17	25	19	15	2.8
49	75	0	53	16	4	2	0	0	71	21	5	3	0	1.4
50	75	0	34	11	17	10	3	0	45	15	23	13	4	2.2
51	75	0	14	18	24	16	3	0	19	24	32	21	4	2.7
52	75	0	53	13	7	1	1	0	71	17	9	1	1	1.5

Ques no	No of replies	Number of scores						Percentage of replies						Weighted Average
		0	1	2	3	4	5	0	1	2	3	4	5	
53	75	0	22	7	17	9	20	0	29	9	23	12	27	3.0
54	75	0	12	3	12	19	29	0	16	4	16	25	39	3.7
55	75	0	15	10	15	20	15	0	20	13	20	27	20	3.1
56	75	0	20	8	14	15	18	0	27	11	19	20	24	3.0
57	75	0	21	11	18	10	15	0	28	15	24	13	20	2.8
58	75	0	42	12	13	4	4	0	56	16	17	5	5	1.9
59	75	0	35	13	11	12	4	0	47	17	15	16	5	2.2
60	75	0	19	8	13	24	11	0	25	11	17	32	15	3.0
61	75	0	56	7	10	1	1	0	75	9	13	1	1	1.5
62	75	0	1	1	4	15	54	0	1	1	5	20	72	4.6
63	75	0	3	6	24	28	14	0	4	8	32	37	19	3.6
64	75	0	22	17	23	10	3	0	29	23	31	13	4	2.4
65	72	3	35	9	8	9	11	4	49	13	11	13	15	2.3
66	72	3	6	12	13	18	23	4	8	17	18	25	32	3.6
67	72	3	11	19	14	12	16	4	15	26	19	17	22	3.0
68	72	3	7	12	19	22	12	4	10	17	26	31	17	3.3
69	72	3	13	20	18	11	10	4	18	28	25	15	14	2.8
70	73	2	0	4	25	42	2	3	0	5	34	58	3	3.6
71	56	19	0	7	27	21	1	25	0	13	48	38	2	3.3
72	73	2	0	2	15	39	17	3	0	3	21	53	23	4.0
73	60	15	1	7	13	24	15	20	2	12	22	40	25	3.8
74	65	10	2	7	20	31	5	13	3	11	31	48	8	3.5
75	66	9	4	5	29	24	4	12	6	8	44	36	6	3.3
76	72	3	0	6	20	39	7	4	0	8	28	54	10	3.7
77	66	9	4	11	14	26	11	12	6	17	21	39	17	3.4
78	70	5	13	16	20	18	3	7	19	23	29	26	4	2.7
79	57	18	1	2	23	26	5	24	2	4	40	46	9	3.6
80	57	18	0	8	16	25	8	24	0	14	28	44	14	3.6
81	47	28	5	15	17	9	1	37	11	32	36	19	2	2.7
82	52	23	2	11	20	16	3	31	4	21	38	31	6	3.1
83	44	31	9	11	11	10	3	41	20	25	25	23	7	2.7
84	50	25	3	8	20	15	4	33	6	16	40	30	8	3.2
85	54	21	1	10	23	13	7	28	2	19	43	24	13	3.3
86	47	28	6	11	19	9	2	37	13	23	40	19	4	2.8
87	53	22	1	5	14	21	12	29	2	9	26	40	23	3.7
88	67	8	1	9	13	29	15	11	1	13	19	43	22	3.7
89	69	6	0	4	10	35	20	8	0	6	14	51	29	4.0
90	70	5	0	6	14	31	19	7	0	9	20	44	27	3.9
91	55	20	5	22	21	3	4	27	9	40	38	5	7	2.6
92	55	20	3	8	28	11	5	27	5	15	51	20	9	3.1
93	39	36	17	11	9	1	1	48	44	28	23	3	3	1.9
94	52	23	7	9	20	12	4	31	13	17	38	23	8	2.9
95	60	15	4	6	18	24	8	20	7	10	30	40	13	3.4
96	49	26	14	5	12	11	7	35	29	10	24	22	14	2.8
97	53	22	1	3	17	23	9	29	2	6	32	43	17	3.7
98	57	18	0	5	21	15	16	24	0	9	37	26	28	3.7
99	55	20	0	10	19	14	12	27	0	18	35	25	22	3.5
100	46	29	5	17	18	4	2	39	11	37	39	9	4	2.6
101	45	30	5	8	18	11	3	40	11	18	40	24	7	3.0
102	39	36	15	11	10	2	1	48	38	28	26	5	3	2.1
103	39	36	8	9	10	10	2	48	21	23	26	26	5	2.7
104	49	26	4	4	11	21	9	35	8	8	22	43	18	3.6
105	39	36	12	4	12	7	4	48	31	10	31	18	10	2.7
106	60	15	0	12	14	22	12	20	0	20	23	37	20	3.6
107	59	16	1	4	16	28	10	21	2	7	27	47	17	3.7
108	52	23	2	9	22	15	4	31	4	17	42	29	8	3.2

TABLE 5 : RESPONDENTS BY DISCIPLINE : LIFE SCIENCES

No of cases = 44

Ques no	No of replies	Number of scores						Percentage of replies						Weighted Average
		0	1	2	3	4	5	0	1	2	3	4	5	
2	44	0	19	25	0	0	0	0	43	57	0	0	0	1.6
3	44	0	0	44	0	0	0	0	0	100	0	0	0	2.0
4	44	0	30	10	4	0	0	0	68	23	9	0	0	1.4
5	44	0	17	13	13	1	0	0	39	30	30	2	0	2.0
6	44	0	26	9	9	0	0	0	59	20	20	0	0	1.6
7	44	0	28	10	6	0	0	0	64	23	14	0	0	1.5
8	43	1	12	23	8	0	0	2	28	53	19	0	0	1.9
9	44	0	1	4	11	12	16	0	2	9	25	27	36	3.9
10	44	0	5	6	12	12	9	0	11	14	27	27	20	3.3
11	44	0	1	9	11	12	11	0	2	20	25	27	25	3.5
12	44	0	0	1	5	18	20	0	0	2	11	41	45	4.3
13	44	0	1	6	13	14	10	0	2	14	30	32	23	3.6
14	44	0	2	4	7	18	13	0	5	9	16	41	30	3.8
15	44	0	8	6	9	8	13	0	18	14	20	18	30	3.3
16	44	0	7	2	11	10	14	0	16	5	25	23	32	3.5
17	44	0	0	1	7	7	29	0	0	2	16	16	66	4.5
18	44	0	3	5	7	14	15	0	7	11	16	32	34	3.8
19	44	0	19	11	7	7	0	0	43	25	16	16	0	2.0
20	44	0	4	4	10	15	11	0	9	9	23	34	25	3.6
21	44	0	13	9	9	11	2	0	30	20	20	25	5	2.5
22	44	0	12	5	4	13	10	0	27	11	9	30	23	3.1
23	44	0	12	10	7	8	7	0	27	23	16	18	16	2.7
24	44	0	26	11	4	3	0	0	59	25	9	7	0	1.6
25	44	0	20	8	9	6	1	0	45	18	20	14	2	2.1
26	44	0	19	7	6	7	5	0	43	16	14	16	11	2.4
27	44	0	6	8	14	9	7	0	14	18	32	20	16	3.1
28	44	0	4	5	8	19	8	0	9	11	18	43	18	3.5
29	44	0	6	8	10	7	13	0	14	18	23	16	30	3.3
30	44	0	4	3	8	11	18	0	9	7	18	25	41	3.8
31	44	0	3	5	10	14	12	0	7	11	23	32	27	3.6
32	44	0	3	7	6	14	14	0	7	16	14	32	32	3.7
33	44	0	16	11	11	4	2	0	36	25	25	9	5	2.2
34	44	0	25	9	7	3	0	0	57	20	16	7	0	1.7
35	44	0	1	5	16	11	11	0	2	11	36	25	25	3.6
36	44	0	0	2	10	14	18	0	0	5	23	32	41	4.1
37	44	0	6	10	14	6	8	0	14	23	32	14	18	3.0
38	44	0	2	9	8	12	13	0	5	20	18	27	30	3.6
39	44	0	9	5	8	9	13	0	20	11	18	20	30	3.3
40	44	0	3	6	9	15	11	0	7	14	20	34	25	3.6
41	44	0	9	6	12	6	11	0	20	14	27	14	25	3.1
42	44	0	12	13	8	6	5	0	27	30	18	14	11	2.5
43	44	0	10	6	6	13	9	0	23	14	14	30	20	3.1
44	44	0	7	7	13	7	10	0	16	16	30	16	23	3.1
45	44	0	0	2	6	9	27	0	0	5	14	20	61	4.4
46	44	0	0	3	11	7	23	0	0	7	25	16	52	4.1
47	44	0	8	8	13	8	7	0	18	18	30	18	16	3.0
48	44	0	11	10	10	5	8	0	25	23	23	11	18	2.8
49	44	0	30	7	4	2	1	0	68	16	9	5	2	1.6
50	44	0	21	10	7	5	1	0	48	23	16	11	2	2.0
51	44	0	3	0	8	15	18	0	7	0	18	34	41	4.0
52	44	0	24	8	6	5	1	0	55	18	14	11	2	1.9

Ques no	No of replies	Number of scores						Percentage of replies						Weighted Average
		0	1	2	3	4	5	0	1	2	3	4	5	
53	44	0	6	9	8	11	10	0	14	20	18	25	23	3.2
54	44	0	3	3	4	13	21	0	7	7	9	30	48	4.0
55	44	0	5	4	7	6	22	0	11	9	16	14	50	3.8
56	44	0	6	2	10	8	18	0	14	5	23	18	41	3.7
57	44	0	16	7	9	4	8	0	36	16	20	9	18	2.6
58	44	0	29	3	6	5	1	0	66	7	14	11	2	1.8
59	44	0	20	10	6	3	5	0	45	23	14	7	11	2.2
60	44	0	4	0	5	10	25	0	9	0	11	23	57	4.2
61	44	0	28	8	2	5	1	0	64	18	5	11	2	1.7
62	44	0	1	0	0	5	38	0	2	0	0	11	86	4.8
63	44	0	3	4	13	16	8	0	7	9	30	36	18	3.5
64	44	0	23	10	4	6	1	0	52	23	9	14	2	1.9
65	43	1	21	6	1	7	8	2	49	14	2	16	19	2.4
66	43	1	3	12	13	4	11	2	7	28	30	9	26	3.2
67	43	1	4	14	10	8	7	2	9	33	23	19	16	3.0
68	43	1	6	5	9	13	10	2	14	12	21	30	23	3.4
69	43	1	9	6	10	11	7	2	21	14	23	26	16	3.0
70	44	0	0	2	7	32	3	0	0	5	16	73	7	3.8
71	37	7	3	9	11	11	3	16	8	24	30	30	8	3.1
72	44	0	3	7	17	10	7	0	7	16	39	23	16	3.3
73	38	6	1	3	9	14	11	14	3	8	24	37	29	3.8
74	39	5	4	6	11	9	9	11	10	15	28	23	23	3.3
75	39	5	3	8	13	10	5	11	8	21	33	26	13	3.2
76	41	3	2	6	14	14	5	7	5	15	34	34	12	3.3
77	40	4	4	6	7	12	11	9	10	15	18	30	28	3.5
78	42	2	13	14	9	3	3	5	31	33	21	7	7	2.3
79	41	3	0	6	17	12	6	7	0	15	41	29	15	3.4
80	42	2	3	6	12	12	9	5	7	14	29	29	21	3.4
81	38	6	9	14	6	5	4	14	24	37	16	13	11	2.5
82	41	3	7	10	10	10	4	7	17	24	24	24	10	2.9
83	31	13	9	7	8	5	2	30	29	23	26	16	6	2.5
84	39	5	3	10	13	8	5	11	8	26	33	21	13	3.1
85	39	5	4	7	13	10	5	11	10	18	33	26	13	3.1
86	35	9	9	8	11	6	1	20	26	23	31	17	3	2.5
87	37	7	5	3	10	14	5	16	14	8	27	38	14	3.3
88	43	1	4	5	15	12	7	2	9	12	35	28	16	3.3
89	43	1	2	6	13	12	10	2	5	14	30	28	23	3.5
90	41	3	2	7	9	13	10	7	5	17	22	32	24	3.5
91	39	5	9	14	9	4	3	11	23	36	23	10	8	2.4
92	35	9	14	6	7	4	4	20	40	17	20	11	11	2.4
93	29	15	18	4	4	2	1	34	62	14	14	7	3	1.8
94	35	9	10	12	6	5	2	20	29	34	17	14	6	2.3
95	42	2	1	4	15	12	10	5	2	10	36	29	24	3.6
96	35	9	11	2	11	4	7	20	31	6	31	11	20	2.8
97	40	4	5	7	13	10	5	9	13	18	33	25	13	3.1
98	39	5	0	13	14	9	3	11	0	33	36	23	8	3.1
99	39	5	3	10	14	7	5	11	8	26	36	18	13	3.0
100	37	7	15	11	4	4	3	16	41	30	11	11	8	2.2
101	31	13	13	6	5	4	3	30	42	19	16	13	10	2.3
102	26	18	13	6	4	2	1	41	50	23	15	8	4	1.9
103	32	12	11	10	6	3	2	27	34	31	19	9	6	2.2
104	37	7	4	3	14	7	9	16	11	8	38	19	24	3.4
105	30	14	11	3	8	4	4	32	37	10	27	13	13	2.6
106	43	1	2	6	14	14	7	2	5	14	33	33	16	3.4
107	40	4	3	7	16	11	3	9	8	18	40	28	8	3.1
108	33	11	8	9	8	5	3	25	24	27	24	15	9	2.6

TABLE 6 : RESPONDENTS BY DISCIPLINE : HUMAN SCIENCES

No of cases = 87

Ques no	No of replies	Number of scores						Percentage of replies						Weighted Average
		0	1	2	3	4	5	0	1	2	3	4	5	
2	87	0	36	51	0	0	0	0	41	59	0	0	0	1.6
3	87	0	0	0	87	0	0	0	0	0	100	0	0	3.0
4	87	0	51	22	14	0	0	0	59	25	16	0	0	1.6
5	87	0	40	34	13	0	0	0	46	39	15	0	0	1.7
6	87	0	29	27	31	0	0	0	33	31	36	0	0	2.0
7	87	0	47	20	20	0	0	0	54	23	23	0	0	1.7
8	87	0	36	39	12	0	0	0	41	45	14	0	0	1.7
9	87	0	5	5	21	37	19	0	6	6	24	43	22	3.7
10	87	0	2	4	22	34	25	0	2	5	25	39	29	3.9
11	87	0	3	7	32	33	12	0	3	8	37	38	14	3.5
12	87	0	2	2	12	38	33	0	2	2	14	44	38	4.1
13	87	0	16	15	26	21	9	0	18	17	30	24	10	2.9
14	87	0	5	12	29	26	15	0	6	14	33	30	17	3.4
15	87	0	20	18	24	15	10	0	23	21	28	17	11	2.7
16	87	0	6	9	26	37	9	0	7	10	30	43	10	3.4
17	87	0	2	1	14	21	49	0	2	1	16	24	56	4.3
18	87	0	11	14	26	21	15	0	13	16	30	24	17	3.2
19	87	0	20	14	32	14	7	0	23	16	37	16	8	2.7
20	87	0	4	6	10	34	33	0	5	7	11	39	38	4.0
21	87	0	22	19	24	14	8	0	25	22	28	16	9	2.6
22	87	0	30	15	25	11	6	0	34	17	29	13	7	2.4
23	87	0	17	10	25	18	17	0	20	11	29	21	20	3.1
24	87	0	29	14	24	12	8	0	33	16	28	14	9	2.5
25	87	0	25	12	24	20	6	0	29	14	28	23	7	2.7
26	87	0	41	14	23	8	1	0	47	16	26	9	1	2.0
27	87	0	9	9	18	23	28	0	10	10	21	26	32	3.6
28	87	0	8	13	22	25	19	0	9	15	25	29	22	3.4
29	87	0	11	9	17	30	20	0	13	10	20	34	23	3.4
30	87	0	21	12	18	24	12	0	24	14	21	28	14	2.9
31	87	0	4	9	20	28	26	0	5	10	23	32	30	3.7
32	87	0	6	8	17	34	22	0	7	9	20	39	25	3.7
33	87	0	19	21	29	10	8	0	22	24	33	11	9	2.6
34	87	0	40	23	19	1	4	0	46	26	22	1	5	1.9
35	87	0	3	7	22	29	26	0	3	8	25	33	30	3.8
36	87	0	4	9	21	29	24	0	5	10	24	33	28	3.7
37	87	0	26	10	18	23	10	0	30	11	21	26	11	2.8
38	87	0	20	17	27	14	9	0	23	20	31	16	10	2.7
39	87	0	23	24	16	15	9	0	26	28	18	17	10	2.6
40	87	0	14	16	27	21	9	0	16	18	31	24	10	2.9
41	87	0	7	18	23	32	7	0	8	21	26	37	8	3.2
42	87	0	25	22	21	14	5	0	29	25	24	16	6	2.4
43	87	0	6	11	12	37	21	0	7	13	14	43	24	3.6
44	87	0	16	15	22	20	14	0	18	17	25	23	16	3.0
45	87	0	2	3	2	22	58	0	2	3	2	25	67	4.5
46	87	0	9	8	15	24	31	0	10	9	17	28	36	3.7
47	87	0	16	18	30	16	7	0	18	21	34	18	8	2.8
48	87	0	39	14	15	12	7	0	45	16	17	14	8	2.2
49	87	0	69	5	11	2	0	0	79	6	13	2	0	1.4
50	87	0	10	10	25	22	20	0	11	11	29	25	23	3.4
51	87	0	6	5	24	29	23	0	7	6	28	33	26	3.7
52	87	0	13	18	23	17	16	0	15	21	26	20	18	3.1

Ques no	No of replies	Number of scores						Percentage of replies						Weighted Average
		0	1	2	3	4	5	0	1	2	3	4	5	
53	87	0	16	13	16	23	19	0	18	15	18	26	22	3.2
54	87	0	7	5	9	31	35	0	8	6	10	36	40	3.9
55	87	0	9	2	20	29	27	0	10	2	23	33	31	3.7
56	87	0	15	10	27	21	14	0	17	11	31	24	16	3.1
57	87	0	37	15	16	13	6	0	43	17	18	15	7	2.3
58	87	0	66	7	10	4	0	0	76	8	11	5	0	1.4
59	87	0	14	12	17	18	26	0	16	14	20	21	30	3.3
60	87	0	6	4	16	30	31	0	7	5	18	34	36	3.9
61	87	0	13	12	27	23	12	0	15	14	31	26	14	3.1
62	87	0	1	0	1	10	75	0	1	0	1	11	86	4.8
63	87	0	6	9	34	29	9	0	7	10	39	33	10	3.3
64	87	0	40	15	25	2	5	0	46	17	29	2	6	2.0
65	85	2	29	13	8	16	19	2	34	15	9	19	22	2.8
66	85	2	9	14	16	18	28	2	11	16	19	21	33	3.5
67	85	2	10	22	19	21	13	2	12	26	22	25	15	3.1
68	85	2	16	12	23	18	16	2	19	14	27	21	19	3.1
69	85	2	21	24	19	12	9	2	25	28	22	14	11	2.6
70	86	1	0	7	35	38	6	1	0	8	41	44	7	3.5
71	75	12	4	9	43	16	3	14	5	12	57	21	4	3.1
72	86	1	1	7	34	35	9	1	1	8	40	41	10	3.5
73	72	15	4	9	20	25	14	17	6	13	28	35	19	3.5
74	81	6	3	11	30	25	12	7	4	14	37	31	15	3.4
75	83	4	5	11	38	27	2	5	6	13	46	33	2	3.1
76	85	2	4	8	28	36	9	2	5	9	33	42	11	3.4
77	85	2	8	12	27	28	10	2	9	14	32	33	12	3.2
78	84	3	24	13	28	15	4	3	29	15	33	18	5	2.5
79	77	10	5	7	29	26	10	11	6	9	38	34	13	3.4
80	77	10	4	12	24	30	7	11	5	16	31	39	9	3.3
81	70	17	17	21	24	7	1	20	24	30	34	10	1	2.3
82	70	17	12	19	30	8	1	20	17	27	43	11	1	2.5
83	66	21	22	14	25	5	0	24	33	21	38	8	0	2.2
84	73	14	11	15	31	12	4	16	15	21	42	16	5	2.8
85	71	16	8	16	29	15	3	18	11	23	41	21	4	2.8
86	69	18	15	14	28	11	1	21	22	20	41	16	1	2.6
87	78	9	4	13	24	23	14	10	5	17	31	29	18	3.4
88	82	5	7	7	35	26	7	6	9	9	43	32	9	3.2
89	84	3	1	10	26	29	18	3	1	12	31	35	21	3.6
90	80	7	2	6	31	30	11	8	3	8	39	38	14	3.5
91	73	14	23	17	29	2	2	16	32	23	40	3	3	2.2
92	64	23	24	12	22	4	2	26	38	19	34	6	3	2.2
93	55	32	32	12	9	1	1	37	58	22	16	2	2	1.7
94	76	11	12	8	25	24	7	13	16	11	33	32	9	3.1
95	82	5	5	7	25	32	13	6	6	9	30	39	16	3.5
96	80	7	8	14	10	33	15	8	10	18	13	41	19	3.4
97	77	10	7	8	27	28	7	11	9	10	35	36	9	3.3
98	79	8	3	9	33	26	8	9	4	11	42	33	10	3.3
99	78	9	8	7	32	24	7	10	10	9	41	31	9	3.2
100	73	14	21	22	20	7	3	16	29	30	27	10	4	2.3
101	63	24	22	14	22	2	3	28	35	22	35	3	5	2.2
102	56	31	31	13	9	2	1	36	55	23	16	4	2	1.7
103	75	12	12	9	26	22	6	14	16	12	35	29	8	3.0
104	78	9	7	5	31	25	10	10	9	6	40	32	13	3.3
105	76	11	13	9	20	24	10	13	17	12	26	32	13	3.1
106	81	6	5	11	22	32	11	7	6	14	27	40	14	3.4
107	80	7	1	11	40	26	2	8	1	14	50	33	3	3.2
108	71	16	15	14	24	14	4	18	21	20	34	20	6	2.7

TABLE 7 : RESPONDENTS BY RANK : LECTURER

No of cases = 121

Ques no	No of replies	Number of scores						Percentage of replies						Weighted Average
		0	1	2	3	4	5	0	1	2	3	4	5	
2	121	0	62	59	0	0	0	0	51	49	0	0	0	1.5
3	121	0	40	30	51	0	0	0	33	25	42	0	0	2.1
4	121	0	121	0	0	0	0	0	100	0	0	0	0	1.0
5	121	0	61	46	14	0	0	0	50	38	12	0	0	1.6
6	121	0	65	26	30	0	0	0	54	21	25	0	0	1.7
7	121	0	83	22	16	0	0	0	69	18	13	0	0	1.4
8	121	0	47	62	12	0	0	0	39	51	10	0	0	1.7
9	121	0	11	9	32	40	29	0	9	7	26	33	24	3.6
10	121	0	3	15	21	46	36	0	2	12	17	38	30	3.8
11	121	0	8	15	33	45	20	0	7	12	27	37	17	3.4
12	121	0	2	6	21	48	44	0	2	5	17	40	36	4.0
13	121	0	16	20	41	27	17	0	13	17	34	22	14	3.1
14	121	0	11	15	37	34	24	0	9	12	31	28	20	3.4
15	121	0	29	19	32	20	21	0	24	16	26	17	17	2.9
16	121	0	13	9	40	39	20	0	11	7	33	32	17	3.4
17	121	0	1	2	18	29	71	0	1	2	15	24	59	4.4
18	121	0	16	17	33	31	24	0	13	14	27	26	20	3.2
19	121	0	30	33	33	21	4	0	25	27	27	17	3	2.5
20	121	0	8	13	16	43	41	0	7	11	13	36	34	3.8
21	121	0	25	26	36	28	6	0	21	21	30	23	5	2.7
22	121	0	38	13	28	26	16	0	31	11	23	21	13	2.7
23	121	0	27	24	25	24	21	0	22	20	21	20	17	2.9
24	121	0	57	26	20	11	7	0	47	21	17	9	6	2.0
25	121	0	34	22	29	23	13	0	28	18	24	19	11	2.7
26	121	0	53	22	22	20	4	0	44	18	18	17	3	2.2
27	121	0	11	13	24	42	31	0	9	11	20	35	26	3.6
28	121	0	7	21	31	39	23	0	6	17	26	32	19	3.4
29	121	0	19	19	25	33	25	0	16	16	21	27	21	3.2
30	121	0	25	16	24	32	24	0	21	13	20	26	20	3.1
31	121	0	10	12	29	38	32	0	8	10	24	31	26	3.6
32	121	0	11	12	22	44	32	0	9	10	18	36	26	3.6
33	121	0	30	31	36	15	9	0	25	26	30	12	7	2.5
34	121	0	66	29	17	6	3	0	55	24	14	5	2	1.8
35	121	0	10	14	31	38	28	0	8	12	26	31	23	3.5
36	121	0	7	14	32	37	31	0	6	12	26	31	26	3.6
37	121	0	30	23	34	21	13	0	25	19	28	17	11	2.7
38	121	0	20	35	28	18	20	0	17	29	23	15	17	2.9
39	121	0	33	28	21	18	21	0	27	23	17	15	17	2.7
40	121	0	24	21	30	28	18	0	20	17	25	23	15	3.0
41	121	0	15	23	32	35	16	0	12	19	26	29	13	3.1
42	121	0	40	31	19	20	11	0	33	26	16	17	9	2.4
43	121	0	17	17	21	41	25	0	14	14	17	34	21	3.3
44	121	0	19	23	29	23	27	0	16	19	24	19	22	3.1
45	121	0	3	4	11	26	77	0	2	3	9	21	64	4.4
46	121	0	4	8	24	35	50	0	3	7	20	29	41	4.0
47	121	0	25	26	39	20	11	0	21	21	32	17	9	2.7
48	121	0	41	23	26	18	13	0	34	19	21	15	11	2.5
49	121	0	87	18	12	3	1	0	72	15	10	2	1	1.5
50	121	0	37	18	30	20	16	0	31	15	25	17	13	2.7
51	121	0	15	11	35	35	25	0	12	9	29	29	21	3.4
52	121	0	46	25	23	19	8	0	38	21	19	16	7	2.3

Ques no	No of replies	Number of scores						Percentage of replies						Weighted Average
		0	1	2	3	4	5	0	1	2	3	4	5	
53	121	0	27	17	26	21	30	0	22	14	21	17	25	3.1
54	121	0	14	5	17	33	52	0	12	4	14	27	43	3.9
55	121	0	16	7	23	37	38	0	13	6	19	31	31	3.6
56	121	0	21	13	32	27	28	0	17	11	26	22	23	3.2
57	121	0	49	17	23	17	15	0	40	14	19	14	12	2.4
58	121	0	80	12	17	8	4	0	66	10	14	7	3	1.7
59	121	0	41	19	20	25	16	0	34	16	17	21	13	2.6
60	121	0	15	5	24	38	39	0	12	4	20	31	32	3.7
61	121	0	51	18	25	21	6	0	42	15	21	17	5	2.3
62	121	0	2	1	1	17	100	0	2	1	1	14	83	4.8
63	121	0	9	10	40	42	20	0	7	8	33	35	17	3.4
64	121	0	47	24	34	10	6	0	39	20	28	8	5	2.2
65	118	3	56	15	6	19	22	2	47	13	5	16	19	2.5
66	118	3	10	24	23	20	41	2	8	20	19	17	35	3.5
67	118	3	10	32	31	24	21	2	8	27	26	20	18	3.1
68	118	3	16	17	30	32	23	2	14	14	25	27	19	3.2
69	118	3	26	30	28	23	11	2	22	25	24	19	9	2.7
70	119	2	0	7	36	69	7	2	0	6	30	58	6	3.6
71	98	23	3	18	45	26	6	19	3	18	46	27	6	3.1
72	118	3	1	9	47	39	22	2	1	8	40	33	19	3.6
73	98	23	3	8	26	38	23	19	3	8	27	39	23	3.7
74	109	12	3	13	40	37	16	10	3	12	37	34	15	3.5
75	111	10	4	11	54	36	6	8	4	10	49	32	5	3.3
76	116	5	3	11	44	45	13	4	3	9	38	39	11	3.5
77	112	9	9	16	31	38	18	7	8	14	28	34	16	3.4
78	116	5	30	29	34	17	6	4	26	25	29	15	5	2.5
79	104	17	3	11	39	37	14	14	3	11	38	36	13	3.5
80	107	14	4	16	30	44	13	12	4	15	28	41	12	3.4
81	97	24	19	31	30	14	3	20	20	32	31	14	3	2.5
82	101	20	12	24	38	21	6	17	12	24	38	21	6	2.9
83	87	34	25	16	29	14	3	28	29	18	33	16	3	2.5
84	100	21	10	20	42	22	6	17	10	20	42	22	6	2.9
85	100	21	8	19	39	26	8	17	8	19	39	26	8	3.1
86	93	28	16	16	41	17	3	23	17	17	44	18	3	2.7
87	101	20	5	12	29	37	18	17	5	12	29	37	18	3.5
88	113	8	10	9	34	46	14	7	9	8	30	41	12	3.4
89	113	8	2	12	29	42	28	7	2	11	26	37	25	3.7
90	112	9	1	11	28	49	23	7	1	10	25	44	21	3.7
91	106	15	25	30	43	3	5	12	24	28	41	3	5	2.4
92	95	26	26	18	37	8	6	21	27	19	39	8	6	2.5
93	76	45	41	18	15	0	2	37	54	24	20	0	3	1.7
94	100	21	23	17	33	19	8	17	23	17	33	19	8	2.7
95	111	10	6	11	35	42	17	8	5	10	32	38	15	3.5
96	100	21	22	14	23	28	13	17	22	14	23	28	13	3.0
97	101	20	5	13	37	36	10	17	5	13	37	36	10	3.3
98	101	20	1	15	39	33	13	17	1	15	39	33	13	3.4
99	100	21	8	9	38	31	14	17	8	9	38	31	14	3.3
100	96	25	27	30	28	7	4	21	28	31	29	7	4	2.3
101	84	37	24	15	31	11	3	31	29	18	37	13	4	2.5
102	73	48	32	20	17	2	2	40	44	27	23	3	3	1.9
103	89	32	17	19	29	18	6	26	19	21	33	20	7	2.7
104	98	23	7	6	39	29	17	19	7	6	40	30	17	3.4
105	87	34	20	9	30	22	6	28	23	10	34	25	7	2.8
106	106	15	4	16	33	37	16	12	4	15	31	35	15	3.4
107	101	20	1	13	43	33	11	17	1	13	43	33	11	3.4
108	89	32	15	14	34	16	10	26	17	16	38	18	11	2.9

TABLE 8 : RESPONDENTS BY RANK : SENIOR LECTURER

No of cases = 55

Ques no	No of replies	Number of scores						Percentage of replies						Weighted Average
		0	1	2	3	4	5	0	1	2	3	4	5	
2	55	0	24	31	0	0	0	0	44	56	0	0	0	1.6
3	55	0	23	10	22	0	0	0	42	18	40	0	0	2.0
4	55	0	0	55	0	0	0	0	0	100	0	0	0	2.0
5	55	0	25	17	12	1	0	0	45	31	22	2	0	1.8
6	55	0	10	17	28	0	0	0	18	31	51	0	0	2.3
7	55	0	18	21	16	0	0	0	33	38	29	0	0	2.0
8	55	0	14	37	4	0	0	0	25	67	7	0	0	1.8
9	55	0	3	10	12	17	13	0	5	18	22	31	24	3.5
10	55	0	3	3	15	23	11	0	5	5	27	42	20	3.7
11	55	0	6	9	20	16	4	0	11	16	36	29	7	3.1
12	55	0	2	3	7	27	16	0	4	5	13	49	29	3.9
13	55	0	10	14	12	14	5	0	18	25	22	25	9	2.8
14	55	0	8	10	13	16	8	0	15	18	24	29	15	3.1
15	55	0	16	9	14	10	6	0	29	16	25	18	11	2.7
16	55	0	7	5	12	25	6	0	13	9	22	45	11	3.3
17	55	0	2	1	7	13	32	0	4	2	13	24	58	4.3
18	55	0	13	12	10	10	10	0	24	22	18	18	18	2.9
19	55	0	20	8	18	6	3	0	36	15	33	11	5	2.3
20	55	0	2	2	15	17	19	0	4	4	27	31	35	3.9
21	55	0	20	15	10	7	3	0	36	27	18	13	5	2.2
22	55	0	21	11	10	9	4	0	38	20	18	16	7	2.3
23	55	0	19	10	10	12	4	0	35	18	18	22	7	2.5
24	55	0	30	9	12	3	1	0	55	16	22	5	2	1.8
25	55	0	24	4	15	11	1	0	44	7	27	20	2	2.3
26	55	0	31	8	9	4	3	0	56	15	16	7	5	1.9
27	55	0	7	7	13	16	12	0	13	13	24	29	22	3.3
28	55	0	11	8	17	11	8	0	20	15	31	20	15	2.9
29	55	0	11	6	10	14	14	0	20	11	18	25	25	3.3
30	55	0	12	11	12	13	7	0	22	20	22	24	13	2.9
31	55	0	2	5	12	20	16	0	4	9	22	36	29	3.8
32	55	0	6	5	7	20	17	0	11	9	13	36	31	3.7
33	55	0	10	20	14	9	2	0	18	36	25	16	4	2.5
34	55	0	34	8	11	1	1	0	62	15	20	2	2	1.7
35	55	0	2	4	20	15	14	0	4	7	36	27	25	3.6
36	55	0	3	10	16	12	14	0	5	18	29	22	25	3.4
37	55	0	15	10	11	9	10	0	27	18	20	16	18	2.8
38	55	0	15	7	17	11	5	0	27	13	31	20	9	2.7
39	55	0	17	14	11	6	7	0	31	25	20	11	13	2.5
40	55	0	10	14	14	13	4	0	18	25	25	24	7	2.8
41	55	0	10	5	20	12	8	0	18	9	36	22	15	3.1
42	55	0	22	14	13	5	1	0	40	25	24	9	2	2.1
43	55	0	7	7	10	18	13	0	13	13	18	33	24	3.4
44	55	0	10	8	16	11	10	0	18	15	29	20	18	3.1
45	55	0	0	2	4	15	34	0	0	4	7	27	62	4.5
46	55	0	5	5	8	17	20	0	9	9	15	31	36	3.8
47	55	0	14	12	17	8	4	0	25	22	31	15	7	2.6
48	55	0	17	9	14	8	7	0	31	16	25	15	13	2.6
49	55	0	38	10	5	2	0	0	69	18	9	4	0	1.5
50	55	0	17	10	13	10	5	0	31	18	24	18	9	2.6
51	55	0	5	9	14	15	12	0	9	16	25	27	22	3.4
52	55	0	31	7	9	2	6	0	56	13	16	4	11	2.0

Ques no	No of replies	Number of scores						Percentage of replies						Weighted Average
		0	1	2	3	4	5	0	1	2	3	4	5	
53	55	0	12	5	11	14	13	0	22	9	20	25	24	3.2
54	55	0	5	2	5	19	24	0	9	4	9	35	44	4.0
55	55	0	8	5	10	13	19	0	15	9	18	24	35	3.5
56	55	0	11	4	15	11	14	0	20	7	27	20	25	3.2
57	55	0	15	9	15	8	8	0	27	16	27	15	15	2.7
58	55	0	34	8	9	4	0	0	62	15	16	7	0	1.7
59	55	0	17	11	11	3	13	0	31	20	20	5	24	2.7
60	55	0	8	7	7	17	16	0	15	13	13	31	29	3.5
61	55	0	31	5	9	5	5	0	56	9	16	9	9	2.1
62	55	0	0	0	3	9	43	0	0	0	5	16	78	4.7
63	55	0	1	5	20	21	8	0	2	9	36	38	15	3.5
64	55	0	21	13	13	7	1	0	38	24	24	13	2	2.2
65	55	0	23	7	8	7	10	0	42	13	15	13	18	2.5
66	55	0	4	11	13	14	13	0	7	20	24	25	24	3.4
67	55	0	11	14	10	13	7	0	20	25	18	24	13	2.8
68	55	0	9	8	13	11	14	0	16	15	24	20	25	3.2
69	55	0	8	15	11	10	11	0	15	27	20	18	20	3.0
70	55	0	0	4	15	33	3	0	0	7	27	60	5	3.6
71	47	8	2	6	22	16	1	15	4	13	47	34	2	3.2
72	55	0	2	6	11	29	7	0	4	11	20	53	13	3.6
73	48	7	1	7	13	15	12	13	2	15	27	31	25	3.6
74	49	6	4	5	14	19	7	11	8	10	29	39	14	3.4
75	49	6	4	7	17	18	3	11	8	14	35	37	6	3.2
76	52	3	2	6	12	25	7	5	4	12	23	48	13	3.6
77	50	5	5	9	10	17	9	9	10	18	20	34	18	3.3
78	53	2	14	9	13	15	2	4	26	17	25	28	4	2.7
79	47	8	2	3	21	18	3	15	4	6	45	38	6	3.4
80	45	10	1	7	15	15	7	18	2	16	33	33	16	3.4
81	39	16	8	11	15	4	1	29	21	28	38	10	3	2.5
82	41	14	5	11	16	9	0	25	12	27	39	22	0	2.7
83	38	17	11	11	11	4	1	31	29	29	29	11	3	2.3
84	40	15	3	10	15	7	5	27	8	25	38	18	13	3.0
85	43	12	2	10	18	8	5	22	5	23	42	19	12	3.1
86	38	17	7	12	13	6	0	31	18	32	34	16	0	2.5
87	43	12	4	6	12	13	8	22	9	14	28	30	19	3.3
88	50	5	0	7	18	14	11	9	0	14	36	28	22	3.6
89	54	1	1	3	12	23	15	2	2	6	22	43	28	3.9
90	52	3	3	5	12	20	12	5	6	10	23	38	23	3.6
91	41	14	9	14	12	4	2	25	22	34	29	10	5	2.4
92	41	14	11	4	17	6	3	25	27	10	41	15	7	2.7
93	34	21	19	7	6	2	0	38	56	21	18	6	0	1.7
94	43	12	6	9	12	13	3	22	14	21	28	30	7	3.0
95	47	8	3	5	14	15	10	15	6	11	30	32	21	3.5
96	43	12	10	4	4	12	13	22	23	9	9	28	30	3.3
97	46	9	4	4	12	18	8	16	9	9	26	39	17	3.5
98	49	6	0	8	17	15	9	11	0	16	35	31	18	3.5
99	48	7	1	12	16	11	8	13	2	25	33	23	17	3.3
100	41	14	10	14	11	4	2	25	24	34	27	10	5	2.4
101	40	15	12	10	11	3	4	27	30	25	28	8	10	2.4
102	36	19	21	9	4	2	0	35	58	25	11	6	0	1.6
103	40	15	12	6	9	11	2	27	30	15	23	28	5	2.6
104	44	11	5	4	15	15	5	20	11	9	34	34	11	3.3
105	41	14	12	4	8	10	7	25	29	10	20	24	17	2.9
106	50	5	2	9	11	18	10	9	4	18	22	36	20	3.5
107	49	6	2	5	20	18	4	11	4	10	41	37	8	3.3
108	43	12	6	12	11	13	1	22	14	28	26	30	2	2.8

TABLE 9 : RESPONDENTS BY RANK : HEAD OF DEPARTMENT

No of cases = 30

Ques no	No of replies	Number of scores						Percentage of replies						Weighted Average
		0	1	2	3	4	5	0	1	2	3	4	5	
2	30	0	14	16	0	0	0	0	47	53	0	0	0	1.5
3	30	0	12	4	14	0	0	0	40	13	47	0	0	2.1
4	30	0	0	0	30	0	0	0	0	0	100	0	0	3.0
5	30	0	17	8	5	0	0	0	57	27	17	0	0	1.6
6	30	0	1	10	19	0	0	0	3	33	63	0	0	2.6
7	30	0	7	11	12	0	0	0	23	37	40	0	0	2.2
8	29	1	6	19	4	0	0	3	21	66	14	0	0	1.9
9	30	0	2	3	8	13	4	0	7	10	27	43	13	3.5
10	30	0	1	1	9	12	7	0	3	3	30	40	23	3.8
11	30	0	4	5	8	11	2	0	13	17	27	37	7	3.1
12	30	0	1	3	3	14	9	0	3	10	10	47	30	3.9
13	30	0	9	5	8	7	1	0	30	17	27	23	3	2.5
14	30	0	5	4	10	6	5	0	17	13	33	20	17	3.1
15	30	0	5	6	8	7	4	0	17	20	27	23	13	3.0
16	30	0	2	6	8	11	3	0	7	20	27	37	10	3.2
17	30	0	0	1	4	7	18	0	0	3	13	23	60	4.4
18	30	0	5	6	8	5	6	0	17	20	27	17	20	3.0
19	30	0	10	7	6	5	2	0	33	23	20	17	7	2.4
20	30	0	1	2	6	11	10	0	3	7	20	37	33	3.9
21	30	0	12	6	6	4	2	0	40	20	20	13	7	2.3
22	30	0	8	4	10	4	4	0	27	13	33	13	13	2.7
23	30	0	9	1	9	7	4	0	30	3	30	23	13	2.9
24	30	0	14	3	7	4	2	0	47	10	23	13	7	2.2
25	30	0	13	5	5	5	2	0	43	17	17	17	7	2.3
26	30	0	15	5	7	2	1	0	50	17	23	7	3	2.0
27	30	0	1	6	6	7	10	0	3	20	20	23	33	3.6
28	30	0	6	8	2	9	5	0	20	27	7	30	17	3.0
29	30	0	4	3	7	8	8	0	13	10	23	27	27	3.4
30	30	0	4	6	8	7	5	0	13	20	27	23	17	3.1
31	30	0	2	2	6	11	9	0	7	7	20	37	30	3.8
32	30	0	4	2	3	9	12	0	13	7	10	30	40	3.8
33	30	0	10	4	11	3	2	0	33	13	37	10	7	2.4
34	30	0	13	10	5	1	1	0	43	33	17	3	3	1.9
35	30	0	3	5	5	10	7	0	10	17	17	33	23	3.4
36	30	0	3	0	5	15	7	0	10	0	17	50	23	3.8
37	30	0	9	3	6	9	3	0	30	10	20	30	10	2.8
38	30	0	10	6	7	3	4	0	33	20	23	10	13	2.5
39	30	0	14	5	4	4	3	0	47	17	13	13	10	2.2
40	30	0	5	6	9	5	5	0	17	20	30	17	17	3.0
41	30	0	6	6	8	6	4	0	20	20	27	20	13	2.9
42	30	0	13	3	9	3	2	0	43	10	30	10	7	2.3
43	30	0	5	4	4	11	6	0	17	13	13	37	20	3.3
44	30	0	3	7	9	7	4	0	10	23	30	23	13	3.1
45	30	0	0	3	1	8	18	0	0	10	3	27	60	4.4
46	30	0	4	6	3	8	9	0	13	20	10	27	30	3.4
47	30	0	8	8	7	4	3	0	27	27	23	13	10	2.5
48	30	0	10	5	4	5	6	0	33	17	13	17	20	2.7
49	30	0	27	0	2	1	0	0	90	0	7	3	0	1.2
50	30	0	11	3	6	7	3	0	37	10	20	23	10	2.6
51	30	0	3	3	7	10	7	0	10	10	23	33	23	3.5
52	30	0	13	7	4	2	4	0	43	23	13	7	13	2.2

Ques no	No of replies	Number of scores						Percentage of replies						Weighted Average
		0	1	2	3	4	5	0	1	2	3	4	5	
53	30	0	5	7	4	8	6	0	17	23	13	27	20	3.1
54	30	0	3	4	3	11	9	0	10	13	10	37	30	3.6
55	30	0	5	4	9	5	7	0	17	13	30	17	23	3.2
56	30	0	9	3	4	6	8	0	30	10	13	20	27	3.0
57	30	0	10	7	5	2	6	0	33	23	17	7	20	2.6
58	30	0	23	2	3	1	1	0	77	7	10	3	3	1.5
59	30	0	11	5	3	5	6	0	37	17	10	17	20	2.7
60	30	0	6	0	3	9	12	0	20	0	10	30	40	3.7
61	30	0	15	4	5	3	3	0	50	13	17	10	10	2.2
62	30	0	1	0	1	4	24	0	3	0	3	13	80	4.7
63	30	0	2	4	11	10	3	0	7	13	37	33	10	3.3
64	30	0	17	5	5	1	2	0	57	17	17	3	7	1.9
65	27	3	6	6	3	6	6	10	22	22	11	22	22	3.0
66	27	3	4	3	6	6	8	10	15	11	22	22	30	3.4
67	27	3	4	9	2	4	8	10	15	33	7	15	30	3.1
68	27	3	4	4	8	10	1	10	15	15	30	37	4	3.0
69	27	3	9	5	8	1	4	10	33	19	30	4	15	2.5
70	29	1	0	2	16	10	1	3	0	7	55	34	3	3.3
71	23	7	2	1	14	6	0	23	9	4	61	26	0	3.0
72	30	0	1	1	8	16	4	0	3	3	27	53	13	3.7
73	24	6	2	4	3	10	5	20	8	17	13	42	21	3.5
74	27	3	2	6	7	9	3	10	7	22	26	33	11	3.2
75	28	2	4	6	9	7	2	7	14	21	32	25	7	2.9
76	30	0	1	3	6	19	1	0	3	10	20	63	3	3.5
77	29	1	2	4	7	11	5	3	7	14	24	38	17	3.4
78	27	3	6	5	10	4	2	10	22	19	37	15	7	2.7
79	24	6	1	1	9	9	4	20	4	4	38	38	17	3.6
80	24	6	2	3	7	8	4	20	8	13	29	33	17	3.4
81	19	11	4	8	2	3	2	37	21	42	11	16	11	2.5
82	21	9	4	5	6	4	2	30	19	24	29	19	10	2.8
83	16	14	4	5	4	2	1	47	25	31	25	13	6	2.4
84	22	8	4	3	7	6	2	27	18	14	32	27	9	3.0
85	21	9	3	4	8	4	2	30	14	19	38	19	10	2.9
86	20	10	7	5	4	3	1	33	35	25	20	15	5	2.3
87	24	6	1	3	7	8	5	20	4	13	29	33	21	3.5
88	29	1	2	5	11	7	4	3	7	17	38	24	14	3.2
89	29	1	0	5	8	11	5	3	0	17	28	38	17	3.6
90	27	3	0	3	14	5	5	10	0	11	52	19	19	3.4
91	20	10	3	9	4	2	2	33	15	45	20	10	10	2.6
92	18	12	4	4	3	5	2	40	22	22	17	28	11	2.8
93	13	17	7	2	1	2	1	57	54	15	8	15	8	2.1
94	20	10	0	3	6	9	2	33	0	15	30	45	10	3.5
95	26	4	1	1	9	11	4	13	4	4	35	42	15	3.6
96	21	9	1	3	6	8	3	30	5	14	29	38	14	3.4
97	23	7	4	1	8	7	3	23	17	4	35	30	13	3.2
98	25	5	2	4	12	2	5	17	8	16	48	8	20	3.2
99	24	6	2	6	11	3	2	20	8	25	46	13	8	2.9
100	19	11	4	6	3	4	2	37	21	32	16	21	11	2.7
101	15	15	4	3	3	3	2	50	27	20	20	20	13	2.7
102	12	18	6	1	2	2	1	60	50	8	17	17	8	2.3
103	17	13	2	3	4	6	2	43	12	18	24	35	12	3.2
104	22	8	3	2	2	9	6	27	14	9	9	41	27	3.6
105	17	13	4	3	2	3	5	43	24	18	12	18	29	3.1
106	28	2	1	4	6	13	4	7	4	14	21	46	14	3.5
107	29	1	2	4	9	14	0	3	7	14	31	48	0	3.2
108	24	6	4	6	9	5	0	20	17	25	38	21	0	2.6

TABLE 10 : RESPONDENTS BY QUALIFICATION : M+3 VERTICAL

No of cases = 103

Ques no	No of replies	Number of scores						Percentage of replies						Weighted Average
		0	1	2	3	4	5	0	1	2	3	4	5	
2	103	0	56	47	0	0	0	0	54	46	0	0	0	1.5
3	103	0	46	17	40	0	0	0	45	17	39	0	0	1.9
4	103	0	61	25	17	0	0	0	59	24	17	0	0	1.6
5	103	0	103	0	0	0	0	0	100	0	0	0	0	1.0
6	103	0	30	32	41	0	0	0	29	31	40	0	0	2.1
7	103	0	48	34	21	0	0	0	47	33	20	0	0	1.7
8	103	0	30	65	8	0	0	0	29	63	8	0	0	1.8
9	103	0	9	14	23	38	19	0	9	14	22	37	18	3.4
10	103	0	1	10	19	45	28	0	1	10	18	44	27	3.9
11	103	0	10	14	30	40	9	0	10	14	29	39	9	3.2
12	103	0	3	7	21	40	32	0	3	7	20	39	31	3.9
13	103	0	24	17	35	18	9	0	23	17	34	17	9	2.7
14	103	0	17	15	38	21	12	0	17	15	37	20	12	3.0
15	103	0	27	19	32	13	12	0	26	18	31	13	12	2.7
16	103	0	9	10	40	34	10	0	9	10	39	33	10	3.3
17	103	0	1	2	11	26	63	0	1	2	11	25	61	4.4
18	103	0	16	18	33	23	13	0	16	17	32	22	13	3.0
19	103	0	25	28	30	13	7	0	24	27	29	13	7	2.5
20	103	0	6	6	18	35	38	0	6	6	17	34	37	3.9
21	103	0	29	19	28	18	9	0	28	18	27	17	9	2.6
22	103	0	37	15	25	18	8	0	36	15	24	17	8	2.5
23	103	0	31	17	22	24	9	0	30	17	21	23	9	2.6
24	103	0	51	19	19	8	6	0	50	18	18	8	6	2.0
25	103	0	35	16	24	20	8	0	34	16	23	19	8	2.5
26	103	0	55	18	19	10	1	0	53	17	18	10	1	1.9
27	103	0	7	15	14	37	30	0	7	15	14	36	29	3.7
28	103	0	14	13	27	31	18	0	14	13	26	30	17	3.3
29	103	0	16	12	23	28	24	0	16	12	22	27	23	3.3
30	103	0	25	17	25	22	14	0	24	17	24	21	14	2.8
31	103	0	10	10	24	33	26	0	10	10	23	32	25	3.5
32	103	0	10	8	19	35	31	0	10	8	18	34	30	3.7
33	103	0	24	25	29	18	7	0	23	24	28	17	7	2.6
34	103	0	56	23	17	4	3	0	54	22	17	4	3	1.8
35	103	0	7	11	31	29	25	0	7	11	30	28	24	3.5
36	103	0	6	12	27	35	23	0	6	12	26	34	22	3.6
37	103	0	25	18	27	23	10	0	24	17	26	22	10	2.8
38	103	0	20	27	30	14	12	0	19	26	29	14	12	2.7
39	103	0	37	20	20	12	14	0	36	19	19	12	14	2.5
40	103	0	21	21	28	22	11	0	20	20	27	21	11	2.8
41	103	0	13	16	37	24	13	0	13	16	36	23	13	3.1
42	103	0	41	24	22	11	5	0	40	23	21	11	5	2.2
43	103	0	10	15	21	35	22	0	10	15	20	34	21	3.4
44	103	0	14	18	35	18	18	0	14	17	34	17	17	3.1
45	103	0	0	6	9	25	63	0	0	6	9	24	61	4.4
46	103	0	7	10	16	33	37	0	7	10	16	32	36	3.8
47	103	0	23	24	38	12	6	0	22	23	37	12	6	2.6
48	103	0	37	14	24	12	16	0	36	14	23	12	16	2.6
49	103	0	76	16	9	2	0	0	74	16	9	2	0	1.4
50	103	0	32	14	31	17	9	0	31	14	30	17	9	2.6
51	103	0	14	16	26	30	17	0	14	16	25	29	17	3.2
52	103	0	43	23	20	8	9	0	42	22	19	8	9	2.2

Ques no	No of replies	Number of scores						Percentage of replies						Weighted Average
		0	1	2	3	4	5	0	1	2	3	4	5	
53	103	0	21	17	22	18	25	0	20	17	21	17	24	3.1
54	103	0	11	5	9	34	44	0	11	5	9	33	43	3.9
55	103	0	18	8	15	35	27	0	17	8	15	34	26	3.4
56	103	0	22	8	30	20	23	0	21	8	29	19	22	3.1
57	103	0	38	18	19	12	16	0	37	17	18	12	16	2.5
58	103	0	69	11	17	4	2	0	67	11	17	4	2	1.6
59	103	0	31	15	24	17	16	0	30	15	23	17	16	2.7
60	103	0	16	8	22	32	25	0	16	8	21	31	24	3.4
61	103	0	46	16	19	15	7	0	45	16	18	15	7	2.2
62	103	0	1	0	5	16	81	0	1	0	5	16	79	4.7
63	103	0	7	10	32	37	17	0	7	10	31	36	17	3.5
64	103	0	43	17	28	10	5	0	42	17	27	10	5	2.2
65	99	4	43	14	6	18	18	4	43	14	6	18	18	2.5
66	99	4	9	18	21	16	35	4	9	18	21	16	35	3.5
67	99	4	14	28	23	16	18	4	14	28	23	16	18	3.0
68	99	4	10	15	27	30	17	4	10	15	27	30	17	3.3
69	99	4	23	24	22	19	11	4	23	24	22	19	11	2.7
70	101	2	0	5	39	52	5	2	0	5	39	51	5	3.6
71	81	22	4	7	41	24	5	21	5	9	51	30	6	3.2
72	102	1	3	8	27	44	20	1	3	8	26	43	20	3.7
73	79	24	4	8	20	27	20	23	5	10	25	34	25	3.6
74	93	10	5	11	24	43	10	10	5	12	26	46	11	3.5
75	93	10	5	7	41	33	7	10	5	8	44	35	8	3.3
76	98	5	1	11	28	48	10	5	1	11	29	49	10	3.6
77	94	9	7	6	31	30	20	9	7	6	33	32	21	3.5
78	97	6	28	20	24	19	6	6	29	21	25	20	6	2.5
79	85	18	5	6	32	30	12	17	6	7	38	35	14	3.4
80	86	17	4	10	30	31	11	17	5	12	35	36	13	3.4
81	76	27	16	21	26	11	2	26	21	28	34	14	3	2.5
82	82	21	11	15	35	17	4	20	13	18	43	21	5	2.9
83	68	35	21	14	23	7	3	34	31	21	34	10	4	2.4
84	79	24	13	12	36	9	9	23	16	15	46	11	11	2.9
85	78	25	7	16	32	15	8	24	9	21	41	19	10	3.0
86	74	29	15	18	28	11	2	28	20	24	38	15	3	2.6
87	83	20	4	10	20	33	16	19	5	12	24	40	19	3.6
88	95	8	9	12	27	35	12	8	9	13	28	37	13	3.3
89	99	4	3	15	20	37	24	4	3	15	20	37	24	3.6
90	98	5	3	14	23	37	21	5	3	14	23	38	21	3.6
91	81	22	19	25	29	4	4	21	23	31	36	5	5	2.4
92	78	25	24	13	23	9	9	24	31	17	29	12	12	2.6
93	59	44	36	10	10	1	2	43	61	17	17	2	3	1.7
94	79	24	14	13	27	18	7	23	18	16	34	23	9	2.9
95	89	14	5	10	26	34	14	14	6	11	29	38	16	3.5
96	83	20	19	13	16	20	15	19	23	16	19	24	18	3.0
97	81	22	8	6	25	31	11	21	10	7	31	38	14	3.4
98	85	18	2	13	31	25	14	17	2	15	36	29	16	3.4
99	82	21	6	13	27	23	13	20	7	16	33	28	16	3.3
100	76	27	22	21	22	8	3	26	29	28	29	11	4	2.3
101	70	33	21	12	22	9	6	32	30	17	31	13	9	2.5
102	58	45	31	10	13	2	2	44	53	17	22	3	3	1.9
103	67	36	16	12	21	14	4	35	24	18	31	21	6	2.7
104	77	26	10	5	22	29	11	25	13	6	29	38	14	3.3
105	71	32	23	7	14	18	9	31	32	10	20	25	13	2.8
106	90	13	4	10	26	36	14	13	4	11	29	40	16	3.5
107	87	16	5	13	23	37	9	16	6	15	26	43	10	3.4
108	75	28	9	14	28	16	8	27	12	19	37	21	11	3.0

TABLE 11 : RESPONDENTS BY QUALIFICATION : M+4 VERTICAL

No of cases = 71

Ques no	No of replies	Number of scores						Percentage of replies						Weighted Average
		0	1	2	3	4	5	0	1	2	3	4	5	
2	71	0	34	37	0	0	0	0	48	52	0	0	0	1.5
3	71	0	24	13	34	0	0	0	34	18	48	0	0	2.1
4	71	0	46	17	8	0	0	0	65	24	11	0	0	1.5
5	71	0	0	71	0	0	0	0	0	100	0	0	0	2.0
6	71	0	32	13	26	0	0	0	45	18	37	0	0	1.9
7	71	0	41	14	16	0	0	0	58	20	23	0	0	1.6
8	70	1	27	38	5	0	0	1	39	54	7	0	0	1.7
9	71	0	5	4	21	21	20	0	7	6	30	30	28	3.7
10	71	0	3	8	13	24	23	0	4	11	18	34	32	3.8
11	71	0	6	11	17	23	14	0	8	15	24	32	20	3.4
12	71	0	1	5	6	32	27	0	1	7	8	45	38	4.1
13	71	0	9	14	16	23	9	0	13	20	23	32	13	3.1
14	71	0	6	10	12	25	18	0	8	14	17	35	25	3.5
15	71	0	17	9	18	15	12	0	24	13	25	21	17	2.9
16	71	0	9	6	15	28	13	0	13	8	21	39	18	3.4
17	71	0	2	1	13	14	41	0	3	1	18	20	58	4.3
18	71	0	15	12	11	13	20	0	21	17	15	18	28	3.2
19	71	0	20	17	17	15	2	0	28	24	24	21	3	2.5
20	71	0	3	6	12	24	26	0	4	8	17	34	37	3.9
21	71	0	18	18	19	14	2	0	25	25	27	20	3	2.5
22	71	0	22	8	17	13	11	0	31	11	24	18	15	2.8
23	71	0	15	13	14	13	16	0	21	18	20	18	23	3.0
24	71	0	32	16	12	8	3	0	45	23	17	11	4	2.1
25	71	0	21	12	16	16	6	0	30	17	23	23	8	2.6
26	71	0	28	14	12	11	6	0	39	20	17	15	8	2.3
27	71	0	10	8	13	19	21	0	14	11	18	27	30	3.5
28	71	0	6	17	14	19	15	0	8	24	20	27	21	3.3
29	71	0	10	11	12	20	18	0	14	15	17	28	25	3.4
30	71	0	11	12	14	18	16	0	15	17	20	25	23	3.2
31	71	0	4	5	15	25	22	0	6	7	21	35	31	3.8
32	71	0	8	3	9	26	25	0	11	4	13	37	35	3.8
33	71	0	17	22	20	7	5	0	24	31	28	10	7	2.5
34	71	0	41	16	9	3	2	0	58	23	13	4	3	1.7
35	71	0	8	10	16	21	16	0	11	14	23	30	23	3.4
36	71	0	7	10	20	15	19	0	10	14	28	21	27	3.4
37	71	0	24	11	14	9	13	0	34	15	20	13	18	2.7
38	71	0	18	18	12	11	12	0	25	25	17	15	17	2.7
39	71	0	24	17	9	11	10	0	34	24	13	15	14	2.5
40	71	0	15	14	17	14	11	0	21	20	24	20	15	2.9
41	71	0	10	13	15	22	11	0	14	18	21	31	15	3.2
42	71	0	25	17	11	13	5	0	35	24	15	18	7	2.4
43	71	0	11	10	10	24	16	0	15	14	14	34	23	3.3
44	71	0	13	14	11	14	19	0	18	20	15	20	27	3.2
45	71	0	3	2	5	13	48	0	4	3	7	18	68	4.4
46	71	0	6	5	11	16	33	0	8	7	15	23	46	3.9
47	71	0	16	16	18	13	8	0	23	23	25	18	11	2.7
48	71	0	18	17	13	14	9	0	25	24	18	20	13	2.7
49	71	0	53	9	6	2	1	0	75	13	8	3	1	1.4
50	71	0	21	9	14	15	12	0	30	13	20	21	17	2.8
51	71	0	8	5	20	22	16	0	11	7	28	31	23	3.5
52	71	0	32	11	11	11	6	0	45	15	15	15	8	2.3

Ques no	No of replies	Number of scores						Percentage of replies						Weighted Average
		0	1	2	3	4	5	0	1	2	3	4	5	
53	71	0	17	8	15	14	17	0	24	11	21	20	24	3.1
54	71	0	10	5	11	16	29	0	14	7	15	23	41	3.7
55	71	0	10	6	14	14	27	0	14	8	20	20	38	3.6
56	71	0	16	10	16	11	18	0	23	14	23	15	25	3.1
57	71	0	23	12	15	10	11	0	32	17	21	14	15	2.6
58	71	0	46	8	8	6	3	0	65	11	11	8	4	1.8
59	71	0	25	14	6	13	13	0	35	20	8	18	18	2.6
60	71	0	12	4	7	20	28	0	17	6	10	28	39	3.7
61	71	0	35	8	12	10	6	0	49	11	17	14	8	2.2
62	71	0	2	1	0	10	58	0	3	1	0	14	82	4.7
63	71	0	5	9	24	25	8	0	7	13	34	35	11	3.3
64	71	0	28	19	16	5	3	0	39	27	23	7	4	2.1
65	69	2	28	12	7	9	13	3	41	17	10	13	19	2.5
66	69	2	6	14	16	17	16	3	9	20	23	25	23	3.3
67	69	2	7	14	13	19	16	3	10	20	19	28	23	3.3
68	69	2	15	8	16	16	14	3	22	12	23	23	20	3.1
69	69	2	13	21	17	8	10	3	19	30	25	12	14	2.7
70	70	1	0	8	20	38	4	1	0	11	29	54	6	3.5
71	60	11	1	12	30	16	1	15	2	20	50	27	2	3.1
72	69	2	0	4	27	28	10	3	0	6	39	41	14	3.6
73	61	10	1	10	13	25	12	14	2	16	21	41	20	3.6
74	64	7	2	9	28	15	10	10	3	14	44	23	16	3.3
75	66	5	5	7	31	20	3	7	8	11	47	30	5	3.1
76	69	2	3	5	24	28	9	3	4	7	35	41	13	3.5
77	67	4	5	16	14	25	7	6	7	24	21	37	10	3.2
78	68	3	14	14	25	11	4	4	21	21	37	16	6	2.7
79	62	9	1	7	21	26	7	13	2	11	34	42	11	3.5
80	61	10	2	9	15	26	9	14	3	15	25	43	15	3.5
81	55	16	10	19	15	9	2	23	18	35	27	16	4	2.5
82	54	17	5	16	17	13	3	24	9	30	31	24	6	2.9
83	47	24	13	11	14	9	0	34	28	23	30	19	0	2.4
84	55	16	2	12	19	19	3	23	4	22	35	35	5	3.2
85	58	13	3	11	22	17	5	18	5	19	38	29	9	3.2
86	53	18	7	10	25	11	0	25	13	19	47	21	0	2.8
87	60	11	2	8	17	19	14	15	3	13	28	32	23	3.6
88	65	6	2	8	21	21	13	8	3	12	32	32	20	3.5
89	66	5	0	3	19	27	17	7	0	5	29	41	26	3.9
90	64	7	1	4	17	28	14	10	2	6	27	44	22	3.8
91	60	11	12	18	22	4	4	15	20	30	37	7	7	2.5
92	53	18	10	9	26	7	1	25	19	17	49	13	2	2.6
93	44	27	19	14	8	3	0	38	43	32	18	7	0	1.9
94	61	10	8	12	18	18	5	14	13	20	30	30	8	3.0
95	66	5	3	4	20	24	15	7	5	6	30	36	23	3.7
96	58	13	10	6	11	19	12	18	17	10	19	33	21	3.3
97	58	13	3	10	18	19	8	18	5	17	31	33	14	3.3
98	60	11	0	9	25	16	10	15	0	15	42	27	17	3.5
99	59	12	3	8	24	16	8	17	5	14	41	27	14	3.3
100	54	17	12	20	13	5	4	24	22	37	24	9	7	2.4
101	46	25	12	13	14	5	2	35	26	28	30	11	4	2.4
102	42	29	17	14	7	4	0	41	40	33	17	10	0	2.0
103	54	17	8	12	16	14	4	24	15	22	30	26	7	2.9
104	59	12	4	3	24	15	13	17	7	5	41	25	22	3.5
105	51	20	9	5	18	12	7	28	18	10	35	24	14	3.1
106	62	9	2	12	16	21	11	13	3	19	26	34	18	3.4
107	61	10	0	5	34	20	2	14	0	8	56	33	3	3.3
108	55	16	7	12	21	13	2	23	13	22	38	24	4	2.8

TABLE 12 : RESPONDENTS BY QUALIFICATION : M+5 VERTICAL

No of cases = 31

Ques no	No of replies	Number of scores						Percentage of replies						Weighted Average
		0	1	2	3	4	5	0	1	2	3	4	5	
2	31	0	9	22	0	0	0	0	29	71	0	0	0	1.7
3	31	0	5	13	13	0	0	0	16	42	42	0	0	2.3
4	31	0	14	12	5	0	0	0	45	39	16	0	0	1.7
5	31	0	0	0	31	0	0	0	0	0	100	0	0	3.0
6	31	0	14	7	10	0	0	0	45	23	32	0	0	1.9
7	31	0	19	5	7	0	0	0	61	16	23	0	0	1.6
8	31	0	10	14	7	0	0	0	32	45	23	0	0	1.9
9	31	0	2	3	8	11	7	0	6	10	26	35	23	3.6
10	31	0	3	1	13	11	3	0	10	3	42	35	10	3.3
11	31	0	2	3	14	9	3	0	6	10	45	29	10	3.3
12	31	0	1	0	4	16	10	0	3	0	13	52	32	4.1
13	31	0	1	8	10	7	5	0	3	26	32	23	16	3.2
14	31	0	1	4	10	9	7	0	3	13	32	29	23	3.5
15	31	0	6	6	4	8	7	0	19	19	13	26	23	3.1
16	31	0	4	3	5	13	6	0	13	10	16	42	19	3.5
17	31	0	0	1	5	8	17	0	0	3	16	26	55	4.3
18	31	0	3	4	7	10	7	0	10	13	23	32	23	3.5
19	31	0	14	3	10	4	0	0	45	10	32	13	0	2.1
20	31	0	2	5	6	12	6	0	6	16	19	39	19	3.5
21	31	0	9	10	5	7	0	0	29	32	16	23	0	2.3
22	31	0	7	5	6	8	5	0	23	16	19	26	16	3.0
23	31	0	8	5	8	6	4	0	26	16	26	19	13	2.8
24	31	0	17	3	8	2	1	0	55	10	26	6	3	1.9
25	31	0	14	3	9	3	2	0	45	10	29	10	6	2.2
26	31	0	15	3	7	5	1	0	48	10	23	16	3	2.2
27	31	0	2	3	16	8	2	0	6	10	52	26	6	3.2
28	31	0	4	7	9	8	3	0	13	23	29	26	10	3.0
29	31	0	7	5	7	7	5	0	23	16	23	23	16	2.9
30	31	0	5	3	5	12	6	0	16	10	16	39	19	3.4
31	31	0	0	4	8	10	9	0	0	13	26	32	29	3.8
32	31	0	3	7	4	12	5	0	10	23	13	39	16	3.3
33	31	0	9	8	11	2	1	0	29	26	35	6	3	2.3
34	31	0	16	8	6	1	0	0	52	26	19	3	0	1.7
35	31	0	0	2	8	13	8	0	0	6	26	42	26	3.9
36	31	0	0	2	5	14	10	0	0	6	16	45	32	4.0
37	31	0	5	7	9	7	3	0	16	23	29	23	10	2.9
38	31	0	7	3	9	7	5	0	23	10	29	23	16	3.0
39	31	0	3	9	7	5	7	0	10	29	23	16	23	3.1
40	31	0	3	6	7	10	5	0	10	19	23	32	16	3.3
41	31	0	7	5	8	7	4	0	23	16	26	23	13	2.9
42	31	0	9	6	8	4	4	0	29	19	26	13	13	2.6
43	31	0	7	3	4	11	6	0	23	10	13	35	19	3.2
44	31	0	5	6	8	8	4	0	16	19	26	26	13	3.0
45	31	0	0	1	2	10	18	0	0	3	6	32	58	4.5
46	31	0	0	4	8	10	9	0	0	13	26	32	29	3.8
47	31	0	8	6	6	7	4	0	26	19	19	23	13	2.8
48	31	0	13	6	6	5	1	0	42	19	19	16	3	2.2
49	31	0	23	3	3	2	0	0	74	10	10	6	0	1.5
50	31	0	12	8	4	4	3	0	39	26	13	13	10	2.3
51	31	0	1	2	10	7	11	0	3	6	32	23	35	3.8
52	31	0	14	5	5	4	3	0	45	16	16	13	10	2.3

Ques no	No of replies	Number of scores						Percentage of replies						Weighted Average
		0	1	2	3	4	5	0	1	2	3	4	5	
53	31	0	6	4	4	11	6	0	19	13	13	35	19	3.2
54	31	0	1	1	5	13	11	0	3	3	16	42	35	4.0
55	31	0	1	2	13	6	9	0	3	6	42	19	29	3.6
56	31	0	3	2	5	12	9	0	10	6	16	39	29	3.7
57	31	0	12	3	9	5	2	0	39	10	29	16	6	2.4
58	31	0	21	3	4	3	0	0	68	10	13	10	0	1.6
59	31	0	13	5	4	3	6	0	42	16	13	10	19	2.5
60	31	0	1	0	4	12	14	0	3	0	13	39	45	4.2
61	31	0	15	3	8	4	1	0	48	10	26	13	3	2.1
62	31	0	0	0	0	4	27	0	0	0	0	13	87	4.9
63	31	0	0	0	15	11	5	0	0	0	48	35	16	3.7
64	31	0	14	6	8	3	0	0	45	19	26	10	0	2.0
65	31	0	13	2	4	5	7	0	42	6	13	16	23	2.7
66	31	0	3	6	4	7	11	0	10	19	13	23	35	3.5
67	31	0	4	13	7	5	2	0	13	42	23	16	6	2.6
68	31	0	4	6	8	7	6	0	13	19	26	23	19	3.2
69	31	0	7	4	8	7	5	0	23	13	26	23	16	3.0
70	31	0	0	0	8	21	2	0	0	0	26	68	6	3.8
71	26	5	1	6	10	8	1	16	4	23	38	31	4	3.1
72	31	0	1	3	12	12	3	0	3	10	39	39	10	3.4
73	29	2	1	1	9	11	7	6	3	3	31	38	24	3.8
74	27	4	1	4	9	7	6	13	4	15	33	26	22	3.5
75	28	3	2	9	8	8	1	10	7	32	29	29	4	2.9
76	30	1	1	4	10	13	2	3	3	13	33	43	7	3.4
77	29	2	4	6	3	11	5	6	14	21	10	38	17	3.2
78	30	1	8	8	8	6	0	3	27	27	27	20	0	2.4
79	27	4	0	2	15	8	2	13	0	7	56	30	7	3.4
80	28	3	1	7	6	10	4	10	4	25	21	36	14	3.3
81	23	8	5	10	5	1	2	26	22	43	22	4	9	2.3
82	26	5	5	9	7	4	1	16	19	35	27	15	4	2.5
83	25	6	5	7	7	4	2	19	20	28	28	16	8	2.6
84	27	4	2	8	9	7	1	13	7	30	33	26	4	2.9
85	27	4	3	6	10	6	2	13	11	22	37	22	7	2.9
86	23	8	7	5	5	4	2	26	30	22	22	17	9	2.5
87	24	7	3	3	11	6	1	23	13	13	46	25	4	3.0
88	31	0	1	1	14	11	4	0	3	3	45	35	13	3.5
89	30	1	0	2	9	12	7	3	0	7	30	40	23	3.8
90	28	3	0	1	13	9	5	10	0	4	46	32	18	3.6
91	25	6	6	9	8	1	1	19	24	36	32	4	4	2.3
92	22	9	6	4	8	3	1	29	27	18	36	14	5	2.5
93	19	12	11	3	4	0	1	39	58	16	21	0	5	1.8
94	22	9	7	3	6	5	1	29	32	14	27	23	5	2.5
95	28	3	2	2	12	10	2	10	7	7	43	36	7	3.3
96	22	9	3	2	6	9	2	29	14	9	27	41	9	3.2
97	30	1	1	2	14	11	2	3	3	7	47	37	7	3.4
98	29	2	1	4	12	9	3	6	3	14	41	31	10	3.3
99	30	1	2	5	14	6	3	3	7	17	47	20	10	3.1
100	25	6	7	8	7	2	1	19	28	32	28	8	4	2.3
101	22	9	6	3	9	3	1	29	27	14	41	14	5	2.5
102	20	11	10	6	3	0	1	35	50	30	15	0	5	1.8
103	24	7	6	4	5	7	2	23	25	17	21	29	8	2.8
104	27	4	1	3	10	9	4	13	4	11	37	33	15	3.4
105	22	9	3	4	8	5	2	29	14	18	36	23	9	3.0
106	31	0	1	7	8	10	5	0	3	23	26	32	16	3.4
107	30	1	0	4	14	8	4	3	0	13	47	27	13	3.4
108	26	5	9	6	5	5	1	16	35	23	19	19	4	2.3

TABLE 13 : RESPONDENTS BY QUALIFICATION : M+6 VERTICAL

No of cases = 1

Ques no	No of replies	Number of scores						Percentage of replies						Weighted Average
		0	1	2	3	4	5	0	1	2	3	4	5	
2	1	0	1	0	0	0	0	0	100	0	0	0	0	1.0
3	1	0	0	1	0	0	0	0	0	100	0	0	0	2.0
4	1	0	0	1	0	0	0	0	0	100	0	0	0	2.0
5	1	0	0	0	0	1	0	0	0	0	0	100	0	4.0
6	1	0	0	1	0	0	0	0	0	100	0	0	0	2.0
7	1	0	0	1	0	0	0	0	0	100	0	0	0	2.0
8	1	0	0	1	0	0	0	0	0	100	0	0	0	2.0
9	1	0	0	1	0	0	0	0	0	100	0	0	0	2.0
10	1	0	0	0	0	1	0	0	0	0	0	100	0	4.0
11	1	0	0	1	0	0	0	0	0	100	0	0	0	2.0
12	1	0	0	0	0	1	0	0	0	0	0	100	0	4.0
13	1	0	1	0	0	0	0	0	100	0	0	0	0	1.0
14	1	0	0	0	0	1	0	0	0	0	0	100	0	4.0
15	1	0	0	0	0	1	0	0	0	0	0	100	0	4.0
16	1	0	0	1	0	0	0	0	0	100	0	0	0	2.0
17	1	0	0	0	0	1	0	0	0	0	0	100	0	4.0
18	1	0	0	1	0	0	0	0	0	100	0	0	0	2.0
19	1	0	1	0	0	0	0	0	100	0	0	0	0	1.0
20	1	0	0	0	1	0	0	0	0	0	100	0	0	3.0
21	1	0	1	0	0	0	0	0	100	0	0	0	0	1.0
22	1	0	1	0	0	0	0	0	100	0	0	0	0	1.0
23	1	0	1	0	0	0	0	0	100	0	0	0	0	1.0
24	1	0	1	0	0	0	0	0	100	0	0	0	0	1.0
25	1	0	1	0	0	0	0	0	100	0	0	0	0	1.0
26	1	0	1	0	0	0	0	0	100	0	0	0	0	1.0
27	1	0	0	0	0	1	0	0	0	0	0	100	0	4.0
28	1	0	0	0	0	1	0	0	0	0	0	100	0	4.0
29	1	0	1	0	0	0	0	0	100	0	0	0	0	1.0
30	1	0	0	1	0	0	0	0	0	100	0	0	0	2.0
31	1	0	0	0	0	1	0	0	0	0	0	100	0	4.0
32	1	0	0	1	0	0	0	0	0	100	0	0	0	2.0
33	1	0	0	0	1	0	0	0	0	0	100	0	0	3.0
34	1	0	0	0	1	0	0	0	0	0	100	0	0	3.0
35	1	0	0	0	1	0	0	0	0	0	100	0	0	3.0
36	1	0	0	0	1	0	0	0	0	0	100	0	0	3.0
37	1	0	0	0	1	0	0	0	0	0	100	0	0	3.0
38	1	0	0	0	1	0	0	0	0	0	100	0	0	3.0
39	1	0	0	1	0	0	0	0	0	100	0	0	0	2.0
40	1	0	0	0	1	0	0	0	0	0	100	0	0	3.0
41	1	0	1	0	0	0	0	0	100	0	0	0	0	1.0
42	1	0	0	1	0	0	0	0	0	100	0	0	0	2.0
43	1	0	1	0	0	0	0	0	100	0	0	0	0	1.0
44	1	0	0	0	0	1	0	0	0	0	0	100	0	4.0
45	1	0	0	0	0	1	0	0	0	0	0	100	0	4.0
46	1	0	0	0	0	1	0	0	0	0	0	100	0	4.0
47	1	0	0	0	1	0	0	0	0	0	100	0	0	3.0
48	1	0	0	0	1	0	0	0	0	0	100	0	0	3.0
49	1	0	0	0	1	0	0	0	0	0	100	0	0	3.0
50	1	0	0	0	0	1	0	0	0	0	0	100	0	4.0
51	1	0	0	0	0	1	0	0	0	0	0	100	0	4.0
52	1	0	1	0	0	0	0	0	100	0	0	0	0	1.0

Ques no	No of replies	Number of scores						Percentage of replies						Weighted Average
		0	1	2	3	4	5	0	1	2	3	4	5	
53	1	0	0	0	0	0	1	0	0	0	0	0	100	5.0
54	1	0	0	0	0	0	1	0	0	0	0	0	100	5.0
55	1	0	0	0	0	0	1	0	0	0	0	0	100	5.0
56	1	0	0	0	0	1	0	0	0	0	0	100	0	4.0
57	1	0	1	0	0	0	0	0	100	0	0	0	0	1.0
58	1	0	1	0	0	0	0	0	100	0	0	0	0	1.0
59	1	0	0	1	0	0	0	0	0	100	0	0	0	2.0
60	1	0	0	0	1	0	0	0	0	0	100	0	0	3.0
61	1	0	1	0	0	0	0	0	100	0	0	0	0	1.0
62	1	0	0	0	0	0	1	0	0	0	0	0	100	5.0
63	1	0	0	0	0	0	1	0	0	0	0	0	100	5.0
64	1	0	0	0	0	0	1	0	0	0	0	0	100	5.0
65	1	0	1	0	0	0	0	0	100	0	0	0	0	1.0
66	1	0	0	0	1	0	0	0	0	0	100	0	0	3.0
67	1	0	0	0	0	1	0	0	0	0	0	100	0	4.0
68	1	0	0	0	0	0	1	0	0	0	0	0	100	5.0
69	1	0	0	1	0	0	0	0	0	100	0	0	0	2.0
70	1	0	0	0	0	1	0	0	0	0	0	100	0	4.0
71	1	0	1	0	0	0	0	0	100	0	0	0	0	1.0
72	1	0	0	1	0	0	0	0	0	100	0	0	0	2.0
73	1	0	0	0	0	0	1	0	0	0	0	0	100	5.0
74	1	0	1	0	0	0	0	0	100	0	0	0	0	1.0
75	1	0	0	1	0	0	0	0	0	100	0	0	0	2.0
76	1	0	1	0	0	0	0	0	100	0	0	0	0	1.0
77	1	0	0	1	0	0	0	0	0	100	0	0	0	2.0
78	1	0	0	1	0	0	0	0	0	100	0	0	0	2.0
79	1	0	0	0	1	0	0	0	0	0	100	0	0	3.0
80	1	0	0	0	1	0	0	0	0	0	100	0	0	3.0
81	1	0	0	0	1	0	0	0	0	0	100	0	0	3.0
82	1	0	0	0	1	0	0	0	0	0	100	0	0	3.0
83	1	0	1	0	0	0	0	0	100	0	0	0	0	1.0
84	1	0	0	1	0	0	0	0	0	100	0	0	0	2.0
85	1	0	0	0	1	0	0	0	0	0	100	0	0	3.0
86	1	0	1	0	0	0	0	0	100	0	0	0	0	1.0
87	1	0	1	0	0	0	0	0	100	0	0	0	0	1.0
88	1	0	0	0	1	0	0	0	0	0	100	0	0	3.0
89	1	0	0	0	1	0	0	0	0	0	100	0	0	3.0
90	1	0	0	0	1	0	0	0	0	0	100	0	0	3.0
91	1	0	0	1	0	0	0	0	0	100	0	0	0	2.0
92	1	0	1	0	0	0	0	0	100	0	0	0	0	1.0
93	1	0	1	0	0	0	0	0	100	0	0	0	0	1.0
94	1	0	0	1	0	0	0	0	0	100	0	0	0	2.0
95	1	0	0	1	0	0	0	0	0	100	0	0	0	2.0
96	1	0	1	0	0	0	0	0	100	0	0	0	0	1.0
97	1	0	1	0	0	0	0	0	100	0	0	0	0	1.0
98	1	0	0	1	0	0	0	0	0	100	0	0	0	2.0
99	1	0	0	1	0	0	0	0	0	100	0	0	0	2.0
100	1	0	0	1	0	0	0	0	0	100	0	0	0	2.0
101	1	0	1	0	0	0	0	0	100	0	0	0	0	1.0
102	1	0	1	0	0	0	0	0	100	0	0	0	0	1.0
103	1	0	1	0	0	0	0	0	100	0	0	0	0	1.0
104	1	0	0	1	0	0	0	0	0	100	0	0	0	2.0
105	1	0	1	0	0	0	0	0	100	0	0	0	0	1.0
106	1	0	0	0	0	1	0	0	0	0	0	100	0	4.0
107	1	0	0	0	1	0	0	0	0	0	100	0	0	3.0
108	0	1	0	0	0	0	0	100	0	0	0	0	0	0.0

TABLE 14 : RESPONDENTS BY EXPERIENCE : TOTAL : 0-5 YEARS

No of cases = 76

Ques no	No of replies	Number of scores						Percentage of replies						Weighted Average
		0	1	2	3	4	5	0	1	2	3	4	5	
2	76	0	29	47	0	0	0	0	38	62	0	0	0	1.6
3	76	0	21	26	29	0	0	0	28	34	38	0	0	2.1
4	76	0	65	10	1	0	0	0	86	13	1	0	0	1.2
5	76	0	30	32	14	0	0	0	39	42	18	0	0	1.8
6	76	0	76	0	0	0	0	0	100	0	0	0	0	1.0
7	76	0	76	0	0	0	0	0	100	0	0	0	0	1.0
8	76	0	33	36	7	0	0	0	43	47	9	0	0	1.7
9	76	0	6	7	16	25	22	0	8	9	21	33	29	3.7
10	76	0	5	11	19	23	18	0	7	14	25	30	24	3.5
11	76	0	8	11	17	26	14	0	11	14	22	34	18	3.4
12	76	0	1	1	13	28	33	0	1	1	17	37	43	4.2
13	76	0	6	15	21	20	14	0	8	20	28	26	18	3.3
14	76	0	8	8	21	22	17	0	11	11	28	29	22	3.4
15	76	0	16	13	21	11	15	0	21	17	28	14	20	2.9
16	76	0	8	5	24	27	12	0	11	7	32	36	16	3.4
17	76	0	0	1	11	19	45	0	0	1	14	25	59	4.4
18	76	0	10	7	20	18	21	0	13	9	26	24	28	3.4
19	76	0	21	21	20	13	1	0	28	28	26	17	1	2.4
20	76	0	6	9	13	27	21	0	8	12	17	36	28	3.6
21	76	0	18	19	22	15	2	0	24	25	29	20	3	2.5
22	76	0	22	9	18	16	11	0	29	12	24	21	14	2.8
23	76	0	15	16	16	13	16	0	20	21	21	17	21	3.0
24	76	0	33	18	15	7	3	0	43	24	20	9	4	2.1
25	76	0	17	15	17	19	8	0	22	20	22	25	11	2.8
26	76	0	31	15	13	12	5	0	41	20	17	16	7	2.3
27	76	0	11	8	21	25	11	0	14	11	28	33	14	3.2
28	76	0	10	11	17	26	12	0	13	14	22	34	16	3.3
29	76	0	12	8	17	23	16	0	16	11	22	30	21	3.3
30	76	0	10	10	14	25	17	0	13	13	18	33	22	3.4
31	76	0	6	8	17	24	21	0	8	11	22	32	28	3.6
32	76	0	8	10	9	29	20	0	11	13	12	38	26	3.6
33	76	0	23	16	25	7	5	0	30	21	33	9	7	2.4
34	76	0	46	17	9	4	0	0	61	22	12	5	0	1.6
35	76	0	5	11	16	26	18	0	7	14	21	34	24	3.5
36	76	0	4	10	15	23	24	0	5	13	20	30	32	3.7
37	76	0	17	10	25	13	11	0	22	13	33	17	14	2.9
38	76	0	12	18	20	11	15	0	16	24	26	14	20	3.0
39	76	0	19	13	16	13	15	0	25	17	21	17	20	2.9
40	76	0	13	14	22	15	12	0	17	18	29	20	16	3.0
41	76	0	9	15	23	18	11	0	12	20	30	24	14	3.1
42	76	0	27	17	15	12	5	0	36	22	20	16	7	2.4
43	76	0	12	12	11	26	15	0	16	16	14	34	20	3.3
44	76	0	13	17	21	9	16	0	17	22	28	12	21	3.0
45	76	0	2	1	8	15	50	0	3	1	11	20	66	4.4
46	76	0	3	8	16	21	28	0	4	11	21	28	37	3.8
47	76	0	14	15	21	16	10	0	18	20	28	21	13	2.9
48	76	0	23	17	16	11	9	0	30	22	21	14	12	2.6
49	76	0	56	10	8	1	1	0	74	13	11	1	1	1.4
50	76	0	23	11	16	16	10	0	30	14	21	21	13	2.7
51	76	0	6	4	20	23	23	0	8	5	26	30	30	3.7
52	76	0	29	16	14	12	5	0	38	21	18	16	7	2.3

Ques no	No of replies	Number of scores						Percentage of replies						Weighted Average
		0	1	2	3	4	5	0	1	2	3	4	5	
53	76	0	19	14	17	11	15	0	25	18	22	14	20	2.9
54	76	0	9	4	11	23	29	0	12	5	14	30	38	3.8
55	76	0	11	6	18	17	24	0	14	8	24	22	32	3.5
56	76	0	14	7	16	18	21	0	18	9	21	24	28	3.3
57	76	0	28	11	18	9	10	0	37	14	24	12	13	2.5
58	76	0	50	9	12	3	2	0	66	12	16	4	3	1.7
59	76	0	28	11	8	18	11	0	37	14	11	24	14	2.6
60	76	0	12	3	10	24	27	0	16	4	13	32	36	3.7
61	76	0	34	10	17	13	2	0	45	13	22	17	3	2.2
62	76	0	2	0	1	9	64	0	3	0	1	12	84	4.8
63	76	0	4	5	27	27	13	0	5	7	36	36	17	3.5
64	76	0	31	15	21	4	5	0	41	20	28	5	7	2.2
65	76	0	34	8	6	11	17	0	45	11	8	14	22	2.6
66	76	0	5	17	16	15	23	0	7	22	21	20	30	3.4
67	76	0	6	21	20	15	14	0	8	28	26	20	18	3.1
68	76	0	14	13	17	18	14	0	18	17	22	24	18	3.1
69	76	0	17	17	17	17	8	0	22	22	22	22	11	2.8
70	76	0	0	2	25	46	3	0	0	3	33	61	4	3.7
71	61	15	3	11	26	19	2	20	5	18	43	31	3	3.1
72	76	0	2	7	29	26	12	0	3	9	38	34	16	3.5
73	63	13	2	6	17	21	17	17	3	10	27	33	27	3.7
74	70	6	3	9	24	23	11	8	4	13	34	33	16	3.4
75	69	7	4	10	28	23	4	9	6	14	41	33	6	3.2
76	73	3	3	8	24	32	6	4	4	11	33	44	8	3.4
77	71	5	8	11	16	24	12	7	11	15	23	34	17	3.3
78	73	3	17	17	21	14	4	4	23	23	29	19	5	2.6
79	65	11	0	9	26	22	8	14	0	14	40	34	12	3.4
80	66	10	1	9	19	27	10	13	2	14	29	41	15	3.5
81	60	16	10	23	18	6	3	21	17	38	30	10	5	2.5
82	61	15	7	14	24	13	3	20	11	23	39	21	5	2.9
83	53	23	14	11	20	6	2	30	26	21	38	11	4	2.5
84	60	16	5	15	22	15	3	21	8	25	37	25	5	2.9
85	63	13	6	13	25	14	5	17	10	21	40	22	8	3.0
86	56	20	10	10	25	9	2	26	18	18	45	16	4	2.7
87	61	15	4	7	19	22	9	20	7	11	31	36	15	3.4
88	72	4	6	5	31	21	9	5	8	7	43	29	13	3.3
89	73	3	1	7	22	23	20	4	1	10	30	32	27	3.7
90	69	7	1	9	19	27	13	9	1	13	28	39	19	3.6
91	66	10	15	20	26	3	2	13	23	30	39	5	3	2.3
92	59	17	17	12	22	6	2	22	29	20	37	10	3	2.4
93	45	31	24	13	8	0	0	41	53	29	18	0	0	1.6
94	63	13	13	14	16	15	5	17	21	22	25	24	8	2.8
95	72	4	5	7	21	24	15	5	7	10	29	33	21	3.5
96	62	14	14	3	16	18	11	18	23	5	26	29	18	3.1
97	61	15	4	11	24	15	7	20	7	18	39	25	11	3.2
98	61	15	1	10	27	17	6	20	2	16	44	28	10	3.3
99	60	16	6	8	24	14	8	21	10	13	40	23	13	3.2
100	59	17	18	18	14	6	3	22	31	31	24	10	5	2.3
101	51	25	17	12	14	7	1	33	33	24	27	14	2	2.3
102	42	34	18	14	8	2	0	45	43	33	19	5	0	1.9
103	55	21	11	13	12	14	5	28	20	24	22	25	9	2.8
104	60	16	4	6	22	18	10	21	7	10	37	30	17	3.4
105	56	20	14	5	15	17	5	26	25	9	27	30	9	2.9
106	68	8	4	10	21	23	10	11	6	15	31	34	15	3.4
107	65	11	1	11	25	20	8	14	2	17	38	31	12	3.4
108	59	17	13	10	15	14	7	22	22	17	25	24	12	2.9

TABLE 15 : RESPONDENTS BY EXPERIENCE : TOTAL : 6-10 YEARS

No of cases = 53

Ques no	No of replies	Number of scores						Percentage of replies						Weighted Average
		0	1	2	3	4	5	0	1	2	3	4	5	
2	53	0	30	23	0	0	0	0	57	43	0	0	0	1.4
3	53	0	17	9	27	0	0	0	32	17	51	0	0	2.2
4	53	0	26	17	10	0	0	0	49	32	19	0	0	1.7
5	53	0	32	13	7	1	0	0	60	25	13	2	0	1.6
6	53	0	0	53	0	0	0	0	0	100	0	0	0	2.0
7	53	0	17	36	0	0	0	0	32	68	0	0	0	1.7
8	53	0	17	28	8	0	0	0	32	53	15	0	0	1.8
9	53	0	8	6	12	13	14	0	15	11	23	25	26	3.4
10	53	0	0	4	12	27	10	0	0	8	23	51	19	3.8
11	53	0	6	6	21	14	6	0	11	11	40	26	11	3.2
12	53	0	3	3	4	26	17	0	6	6	8	49	32	4.0
13	53	0	16	6	14	13	4	0	30	11	26	25	8	2.7
14	53	0	9	7	14	15	8	0	17	13	26	28	15	3.1
15	53	0	11	8	13	14	7	0	21	15	25	26	13	3.0
16	53	0	4	5	14	23	7	0	8	9	26	43	13	3.5
17	53	0	1	1	9	12	30	0	2	2	17	23	57	4.3
18	53	0	4	13	11	14	11	0	8	25	21	26	21	3.3
19	53	0	17	11	17	4	4	0	32	21	32	8	8	2.4
20	53	0	2	6	10	17	18	0	4	11	19	32	34	3.8
21	53	0	17	11	12	10	3	0	32	21	23	19	6	2.5
22	53	0	20	6	12	11	4	0	38	11	23	21	8	2.5
23	53	0	19	7	10	14	3	0	36	13	19	26	6	2.5
24	53	0	29	7	10	4	3	0	55	13	19	8	6	2.0
25	53	0	24	5	11	10	3	0	45	9	21	19	6	2.3
26	53	0	30	8	9	4	2	0	57	15	17	8	4	1.9
27	53	0	5	11	7	16	14	0	9	21	13	30	26	3.4
28	53	0	6	8	12	19	8	0	11	15	23	36	15	3.3
29	53	0	7	7	13	14	12	0	13	13	25	26	23	3.3
30	53	0	12	7	12	11	11	0	23	13	23	21	21	3.0
31	53	0	5	4	12	20	12	0	9	8	23	38	23	3.6
32	53	0	6	8	6	19	14	0	11	15	11	36	26	3.5
33	53	0	12	18	16	6	1	0	23	34	30	11	2	2.4
34	53	0	28	13	11	0	1	0	53	25	21	0	2	1.7
35	53	0	4	4	15	17	13	0	8	8	28	32	25	3.6
36	53	0	3	5	11	19	15	0	6	9	21	36	28	3.7
37	53	0	15	9	8	12	9	0	28	17	15	23	17	2.8
38	53	0	15	9	14	6	9	0	28	17	26	11	17	2.7
39	53	0	15	13	9	8	8	0	28	25	17	15	15	2.6
40	53	0	13	13	9	10	8	0	25	25	17	19	15	2.8
41	53	0	7	5	18	15	8	0	13	9	34	28	15	3.2
42	53	0	17	12	11	11	2	0	32	23	21	21	4	2.4
43	53	0	6	5	8	21	13	0	11	9	15	40	25	3.6
44	53	0	7	9	16	14	7	0	13	17	30	26	13	3.1
45	53	0	0	3	3	17	30	0	0	6	6	32	57	4.4
46	53	0	2	3	12	15	21	0	4	6	23	28	40	3.9
47	53	0	14	7	20	9	3	0	26	13	38	17	6	2.6
48	53	0	20	8	15	5	5	0	38	15	28	9	9	2.4
49	53	0	42	4	6	1	0	0	79	8	11	2	0	1.4
50	53	0	16	9	14	10	4	0	30	17	26	19	8	2.6
51	53	0	7	6	11	19	10	0	13	11	21	36	19	3.4
52	53	0	27	8	9	5	4	0	51	15	17	9	8	2.1

Ques no	No of replies	Number of scores						Percentage of replies						Weighted Average
		0	1	2	3	4	5	0	1	2	3	4	5	
53	53	0	9	6	10	19	9	0	17	11	19	36	17	3.2
54	53	0	6	3	2	25	17	0	11	6	4	47	32	3.8
55	53	0	8	3	12	16	14	0	15	6	23	30	26	3.5
56	53	0	12	1	10	16	14	0	23	2	19	30	26	3.4
57	53	0	20	8	13	6	6	0	38	15	25	11	11	2.4
58	53	0	37	6	6	3	1	0	70	11	11	6	2	1.6
59	53	0	13	13	11	4	12	0	25	25	21	8	23	2.8
60	53	0	7	3	9	13	21	0	13	6	17	25	40	3.7
61	53	0	26	8	8	7	4	0	49	15	15	13	8	2.2
62	53	0	0	1	1	7	44	0	0	2	2	13	83	4.8
63	53	0	2	10	17	16	8	0	4	19	32	30	15	3.3
64	53	0	27	8	12	3	3	0	51	15	23	6	6	2.0
65	50	3	18	8	5	10	9	6	36	16	10	20	18	2.7
66	50	3	6	7	9	12	16	6	12	14	18	24	32	3.5
67	50	3	10	15	8	8	9	6	20	30	16	16	18	2.8
68	50	3	7	8	13	14	8	6	14	16	26	28	16	3.2
69	50	3	9	12	15	6	8	6	18	24	30	12	16	2.8
70	52	1	0	2	18	29	3	2	0	4	35	56	6	3.6
71	41	12	2	4	24	10	1	23	5	10	59	24	2	3.1
72	51	2	0	3	20	22	6	4	0	6	39	43	12	3.6
73	42	11	4	4	6	16	12	21	10	10	14	38	29	3.7
74	45	8	3	7	14	14	7	15	7	16	31	31	16	3.3
75	47	6	3	8	20	13	3	11	6	17	43	28	6	3.1
76	50	3	2	4	15	22	7	6	4	8	30	44	14	3.6
77	48	5	5	7	11	18	7	9	10	15	23	38	15	3.3
78	50	3	14	12	11	11	2	6	28	24	22	22	4	2.5
79	43	10	3	2	20	14	4	19	7	5	47	33	9	3.3
80	45	8	4	3	17	16	5	15	9	7	38	36	11	3.3
81	40	13	12	8	14	5	1	25	30	20	35	13	3	2.4
82	41	12	5	9	18	9	0	23	12	22	44	22	0	2.8
83	35	18	13	7	11	3	1	34	37	20	31	9	3	2.2
84	42	11	9	6	17	5	5	21	21	14	40	12	12	2.8
85	39	14	4	5	20	7	3	26	10	13	51	18	8	3.0
86	40	13	8	9	18	5	0	25	20	23	45	13	0	2.5
87	44	9	3	8	15	10	8	17	7	18	34	23	18	3.3
88	48	5	5	5	20	12	6	9	10	10	42	25	13	3.2
89	50	3	1	6	10	22	11	6	2	12	20	44	22	3.7
90	51	2	1	6	16	18	10	4	2	12	31	35	20	3.6
91	43	10	12	13	14	3	1	19	28	30	33	7	2	2.3
92	38	15	13	3	17	2	3	28	34	8	45	5	8	2.4
93	31	22	20	4	6	1	0	42	65	13	19	3	0	1.6
94	41	12	5	8	15	10	3	23	12	20	37	24	7	3.0
95	46	7	3	4	15	15	9	13	7	9	33	33	20	3.5
96	42	11	8	12	6	10	6	21	19	29	14	24	14	2.9
97	45	8	8	2	16	16	3	15	18	4	36	36	7	3.1
98	46	7	2	9	19	10	6	13	4	20	41	22	13	3.2
99	46	7	2	12	18	9	5	13	4	26	39	20	11	3.1
100	43	10	14	13	10	5	1	19	33	30	23	12	2	2.2
101	37	16	11	6	14	2	4	30	30	16	38	5	11	2.5
102	33	20	23	4	5	1	0	38	70	12	15	3	0	1.5
103	37	16	8	8	13	6	2	30	22	22	35	16	5	2.6
104	42	11	5	3	14	13	7	21	12	7	33	31	17	3.3
105	34	19	12	4	11	4	3	36	35	12	32	12	9	2.5
106	48	5	1	11	13	17	6	9	2	23	27	35	13	3.3
107	47	6	2	7	24	13	1	11	4	15	51	28	2	3.1
108	40	13	6	11	15	7	1	25	15	28	38	18	3	2.7

TABLE 16 : RESPONDENTS BY EXPERIENCE : TOTAL : 11+ YEARS

No of cases = 77

Ques no	No of replies	Number of scores						Percentage of replies						Weighted Average
		0	1	2	3	4	5	0	1	2	3	4	5	
2	77	0	41	36	0	0	0	0	53	47	0	0	0	1.5
3	77	0	37	9	31	0	0	0	48	12	40	0	0	1.9
4	77	0	30	28	19	0	0	0	39	36	25	0	0	1.9
5	77	0	41	26	10	0	0	0	53	34	13	0	0	1.6
6	77	0	0	0	77	0	0	0	0	0	100	0	0	3.0
7	77	0	15	18	44	0	0	0	19	23	57	0	0	2.4
8	76	1	17	54	5	0	0	1	22	71	7	0	0	1.8
9	77	0	2	9	24	32	10	0	3	12	31	42	13	3.5
10	77	0	2	4	14	31	26	0	3	5	18	40	34	4.0
11	77	0	4	12	23	32	6	0	5	16	30	42	8	3.3
12	77	0	1	8	14	35	19	0	1	10	18	45	25	3.8
13	77	0	13	18	26	15	5	0	17	23	34	19	6	2.8
14	77	0	7	14	25	19	12	0	9	18	32	25	16	3.2
15	77	0	23	13	20	12	9	0	30	17	26	16	12	2.6
16	77	0	10	10	22	25	10	0	13	13	29	32	13	3.2
17	77	0	2	2	9	18	46	0	3	3	12	23	60	4.4
18	77	0	20	15	20	14	8	0	26	19	26	18	10	2.7
19	77	0	22	16	20	15	4	0	29	21	26	19	5	2.5
20	77	0	3	2	14	27	31	0	4	3	18	35	40	4.1
21	77	0	22	17	18	14	6	0	29	22	23	18	8	2.5
22	77	0	25	13	18	12	9	0	32	17	23	16	12	2.6
23	77	0	21	12	18	16	10	0	27	16	23	21	13	2.8
24	77	0	39	13	14	7	4	0	51	17	18	9	5	2.0
25	77	0	30	11	21	10	5	0	39	14	27	13	6	2.3
26	77	0	38	12	16	10	1	0	49	16	21	13	1	2.0
27	77	0	3	7	15	24	28	0	4	9	19	31	36	3.9
28	77	0	8	18	21	14	16	0	10	23	27	18	21	3.2
29	77	0	15	13	12	18	19	0	19	17	16	23	25	3.2
30	77	0	19	16	18	16	8	0	25	21	23	21	10	2.7
31	77	0	3	7	18	25	24	0	4	9	23	32	31	3.8
32	77	0	7	1	17	25	27	0	9	1	22	32	35	3.8
33	77	0	15	21	20	14	7	0	19	27	26	18	9	2.7
34	77	0	39	17	13	4	4	0	51	22	17	5	5	1.9
35	77	0	6	8	25	20	18	0	8	10	32	26	23	3.5
36	77	0	6	9	27	22	13	0	8	12	35	29	17	3.4
37	77	0	22	17	18	14	6	0	29	22	23	18	8	2.5
38	77	0	18	21	18	15	5	0	23	27	23	19	6	2.6
39	77	0	30	21	11	7	8	0	39	27	14	9	10	2.2
40	77	0	13	14	22	21	7	0	17	18	29	27	9	2.9
41	77	0	15	14	19	20	9	0	19	18	25	26	12	2.9
42	77	0	31	19	15	5	7	0	40	25	19	6	9	2.2
43	77	0	11	11	16	23	16	0	14	14	21	30	21	3.3
44	77	0	12	12	17	18	18	0	16	16	22	23	23	3.2
45	77	0	1	5	5	17	49	0	1	6	6	22	64	4.4
46	77	0	8	8	7	24	30	0	10	10	9	31	39	3.8
47	77	0	19	24	22	7	5	0	25	31	29	9	6	2.4
48	77	0	25	12	13	15	12	0	32	16	17	19	16	2.7
49	77	0	54	14	5	4	0	0	70	18	6	5	0	1.5
50	77	0	26	11	19	11	10	0	34	14	25	14	13	2.6
51	77	0	10	13	25	18	11	0	13	17	32	23	14	3.1
52	77	0	34	15	13	6	9	0	44	19	17	8	12	2.2

Ques no	No of replies	Number of scores						Percentage of replies						Weighted Average
		0	1	2	3	4	5	0	1	2	3	4	5	
53	77	0	16	9	14	13	25	0	21	12	18	17	32	3.3
54	77	0	7	4	12	15	39	0	9	5	16	19	51	4.0
55	77	0	10	7	12	22	26	0	13	9	16	29	34	3.6
56	77	0	15	12	25	10	15	0	19	16	32	13	19	3.0
57	77	0	26	14	12	12	13	0	34	18	16	16	17	2.6
58	77	0	50	7	11	7	2	0	65	9	14	9	3	1.8
59	77	0	28	11	15	11	12	0	36	14	19	14	16	2.6
60	77	0	10	6	15	27	19	0	13	8	19	35	25	3.5
61	77	0	37	9	14	9	8	0	48	12	18	12	10	2.2
62	77	0	1	0	3	14	59	0	1	0	4	18	77	4.7
63	77	0	6	4	27	30	10	0	8	5	35	39	13	3.4
64	77	0	27	19	19	11	1	0	35	25	25	14	1	2.2
65	74	3	33	12	6	11	12	4	45	16	8	15	16	2.4
66	74	3	7	14	17	13	23	4	9	19	23	18	31	3.4
67	74	3	9	19	15	18	13	4	12	26	20	24	18	3.1
68	74	3	8	8	21	21	16	4	11	11	28	28	22	3.4
69	74	3	17	21	15	11	10	4	23	28	20	15	14	2.7
70	75	2	0	9	24	37	5	3	0	12	32	49	7	3.5
71	66	11	2	10	31	19	4	14	3	15	47	29	6	3.2
72	76	1	2	6	17	36	15	1	3	8	22	47	20	3.7
73	65	12	0	9	19	26	11	16	0	14	29	40	17	3.6
74	70	7	3	8	23	28	8	9	4	11	33	40	11	3.4
75	72	5	5	6	32	25	4	6	7	8	44	35	6	3.2
76	75	2	1	8	23	35	8	3	1	11	31	47	11	3.5
77	72	5	3	11	21	24	13	6	4	15	29	33	18	3.5
78	73	4	19	14	25	11	4	5	26	19	34	15	5	2.5
79	67	10	3	4	23	28	9	13	4	6	34	42	13	3.5
80	65	12	2	14	16	24	9	16	3	22	25	37	14	3.4
81	55	22	9	19	15	10	2	29	16	35	27	18	4	2.6
82	61	16	9	17	18	12	5	21	15	28	30	20	8	2.8
83	53	24	13	14	13	11	2	31	25	26	25	21	4	2.5
84	60	17	3	12	25	15	5	22	5	20	42	25	8	3.1
85	62	15	3	15	20	17	7	19	5	24	32	27	11	3.2
86	55	22	12	14	15	12	2	29	22	25	27	22	4	2.6
87	63	14	3	6	14	26	14	18	5	10	22	41	22	3.7
88	72	5	1	11	12	34	14	6	1	15	17	47	19	3.7
89	73	4	1	7	17	31	17	5	1	10	23	42	23	3.8
90	71	6	2	4	19	29	17	8	3	6	27	41	24	3.8
91	58	19	10	20	19	3	6	25	17	34	33	5	10	2.6
92	57	20	11	11	18	11	6	26	19	19	32	19	11	2.8
93	47	30	23	10	8	3	3	39	49	21	17	6	6	2.0
94	59	18	11	7	20	16	5	23	19	12	34	27	8	2.9
95	66	11	2	6	22	29	7	14	3	9	33	44	11	3.5
96	60	17	11	6	11	20	12	22	18	10	18	33	20	3.3
97	64	13	1	5	17	30	11	17	2	8	27	47	17	3.7
98	68	9	0	8	22	23	15	12	0	12	32	34	22	3.7
99	66	11	3	7	23	22	11	14	5	11	35	33	17	3.5
100	54	23	9	19	18	4	4	30	17	35	33	7	7	2.5
101	51	26	12	10	17	8	4	34	24	20	33	16	8	2.6
102	46	31	18	12	10	3	3	40	39	26	22	7	7	2.2
103	54	23	12	7	17	15	3	30	22	13	31	28	6	2.8
104	62	15	6	3	20	22	11	19	10	5	32	35	18	3.5
105	55	22	10	7	14	14	10	29	18	13	25	25	18	3.1
106	68	9	2	8	16	28	14	12	3	12	24	41	21	3.6
107	67	10	2	4	23	32	6	13	3	6	34	48	9	3.5
108	57	20	6	11	24	13	3	26	11	19	42	23	5	2.9

TABLE 17 : RESPONDENTS BY EXPERIENCE : CURRENT SUBJECT : 0-5 YEARS

No of cases = 108

Ques no	No of replies	Number of scores						Percentage of replies						Weighted Average
		0	1	2	3	4	5	0	1	2	3	4	5	
2	108	0	51	57	0	0	0	0	47	53	0	0	0	1.5
3	108	0	33	28	47	0	0	0	31	26	44	0	0	2.1
4	108	0	83	18	7	0	0	0	77	17	6	0	0	1.3
5	108	0	48	41	19	0	0	0	44	38	18	0	0	1.7
6	108	0	76	17	15	0	0	0	70	16	14	0	0	1.4
7	108	0	108	0	0	0	0	0	100	0	0	0	0	1.0
8	108	0	48	49	11	0	0	0	44	45	10	0	0	1.7
9	108	0	8	11	23	38	28	0	7	10	21	35	26	3.6
10	108	0	5	14	26	38	25	0	5	13	24	35	23	3.6
11	108	0	11	13	30	36	18	0	10	12	28	33	17	3.3
12	108	0	2	5	18	41	42	0	2	5	17	38	39	4.1
13	108	0	13	18	34	26	17	0	12	17	31	24	16	3.1
14	108	0	10	10	32	33	23	0	9	9	30	31	21	3.5
15	108	0	24	19	27	17	21	0	22	18	25	16	19	2.9
16	108	0	9	11	32	37	19	0	8	10	30	34	18	3.4
17	108	0	0	1	14	25	68	0	0	1	13	23	63	4.5
18	108	0	15	9	28	30	26	0	14	8	26	28	24	3.4
19	108	0	30	22	32	19	5	0	28	20	30	18	5	2.5
20	108	0	6	10	17	39	36	0	6	9	16	36	33	3.8
21	108	0	26	27	29	21	5	0	24	25	27	19	5	2.6
22	108	0	31	14	26	22	15	0	29	13	24	20	14	2.8
23	108	0	23	20	23	21	21	0	21	19	21	19	19	3.0
24	108	0	48	24	19	12	5	0	44	22	18	11	5	2.1
25	108	0	31	19	24	24	10	0	29	18	22	22	9	2.7
26	108	0	48	20	20	15	5	0	44	19	19	14	5	2.2
27	108	0	15	13	25	37	18	0	14	12	23	34	17	3.3
28	108	0	12	15	29	36	16	0	11	14	27	33	15	3.3
29	108	0	15	12	23	30	28	0	14	11	21	28	26	3.4
30	108	0	13	13	24	33	25	0	12	12	22	31	23	3.4
31	108	0	8	8	27	33	32	0	7	7	25	31	30	3.7
32	108	0	9	11	16	40	32	0	8	10	15	37	30	3.7
33	108	0	28	23	39	11	7	0	26	21	36	10	6	2.5
34	108	0	59	27	13	7	2	0	55	25	12	6	2	1.8
35	108	0	7	12	27	36	26	0	6	11	25	33	24	3.6
36	108	0	5	11	26	34	32	0	5	10	24	31	30	3.7
37	108	0	26	14	30	22	16	0	24	13	28	20	15	2.9
38	108	0	19	22	30	18	19	0	18	20	28	17	18	3.0
39	108	0	27	21	21	19	20	0	25	19	19	18	19	2.9
40	108	0	17	20	31	23	17	0	16	19	29	21	16	3.0
41	108	0	12	21	30	28	17	0	11	19	28	26	16	3.2
42	108	0	40	23	21	17	7	0	37	21	19	16	6	2.3
43	108	0	12	15	18	40	23	0	11	14	17	37	21	3.4
44	108	0	17	19	30	19	23	0	16	18	28	18	21	3.1
45	108	0	2	2	8	21	75	0	2	2	7	19	69	4.5
46	108	0	5	11	19	29	44	0	5	10	18	27	41	3.9
47	108	0	21	22	31	21	13	0	19	20	29	19	12	2.8
48	108	0	34	24	23	15	12	0	31	22	21	14	11	2.5
49	108	0	76	16	11	4	1	0	70	15	10	4	1	1.5
50	108	0	30	17	24	24	13	0	28	16	22	22	12	2.8
51	108	0	9	8	26	36	29	0	8	7	24	33	27	3.6
52	108	0	40	24	18	17	9	0	37	22	17	16	8	2.4

Ques no	No of replies	Number of scores						Percentage of replies						Weighted Average
		0	1	2	3	4	5	0	1	2	3	4	5	
53	108	0	21	17	24	21	25	0	19	16	22	19	23	3.1
54	108	0	9	5	12	35	47	0	8	5	11	32	44	4.0
55	108	0	11	9	24	28	36	0	10	8	22	26	33	3.6
56	108	0	18	12	22	25	31	0	17	11	20	23	29	3.4
57	108	0	38	16	24	14	16	0	35	15	22	13	15	2.6
58	108	0	69	13	17	5	4	0	64	12	16	5	4	1.7
59	108	0	33	17	16	23	19	0	31	16	15	21	18	2.8
60	108	0	13	4	13	39	39	0	12	4	12	36	36	3.8
61	108	0	46	14	21	21	6	0	43	13	19	19	6	2.3
62	108	0	2	0	4	11	91	0	2	0	4	10	84	4.8
63	108	0	5	8	39	39	17	0	5	7	36	36	16	3.5
64	108	0	42	21	33	6	6	0	39	19	31	6	6	2.2
65	108	0	50	11	10	16	21	0	46	10	9	15	19	2.5
66	108	0	9	23	20	22	34	0	8	21	19	20	31	3.5
67	108	0	10	32	26	23	17	0	9	30	24	21	16	3.0
68	108	0	18	18	27	23	22	0	17	17	25	21	20	3.1
69	108	0	21	24	25	24	14	0	19	22	23	22	13	2.9
70	108	0	0	4	36	60	8	0	0	4	33	56	7	3.7
71	86	22	3	15	40	25	3	20	3	17	47	29	3	3.1
72	108	0	2	8	41	41	16	0	2	7	38	38	15	3.6
73	88	20	2	8	22	32	24	19	2	9	25	36	27	3.8
74	99	9	3	11	37	34	14	8	3	11	37	34	14	3.5
75	99	9	5	14	44	32	4	8	5	14	44	32	4	3.2
76	104	4	3	9	35	49	8	4	3	9	34	47	8	3.5
77	101	7	11	16	26	36	12	6	11	16	26	36	12	3.2
78	103	5	21	27	31	20	4	5	20	26	30	19	4	2.6
79	93	15	0	11	41	30	11	14	0	12	44	32	12	3.4
80	94	14	2	15	28	37	12	13	2	16	30	39	13	3.4
81	84	24	13	31	29	8	3	22	15	37	35	10	4	2.5
82	88	20	9	19	35	20	5	19	10	22	40	23	6	2.9
83	77	31	22	15	28	10	2	29	29	19	36	13	3	2.4
84	86	22	7	20	34	21	4	20	8	23	40	24	5	2.9
85	89	19	7	17	39	20	6	18	8	19	44	22	7	3.0
86	79	29	11	16	37	13	2	27	14	20	47	16	3	2.7
87	87	21	4	12	24	34	13	19	5	14	28	39	15	3.5
88	101	7	7	6	42	33	13	6	7	6	42	33	13	3.4
89	105	3	1	10	30	38	26	3	1	10	29	36	25	3.7
90	101	7	1	12	31	39	18	6	1	12	31	39	18	3.6
91	91	17	19	29	36	3	4	16	21	32	40	3	4	2.4
92	82	26	20	16	32	10	4	24	24	20	39	12	5	2.5
93	65	43	31	20	13	0	1	40	48	31	20	0	2	1.8
94	88	20	17	16	28	20	7	19	19	18	32	23	8	2.8
95	100	8	6	8	30	38	18	7	6	8	30	38	18	3.5
96	88	20	18	7	18	29	16	19	20	8	20	33	18	3.2
97	90	18	5	12	35	27	11	17	6	13	39	30	12	3.3
98	93	15	2	14	40	25	12	14	2	15	43	27	13	3.3
99	91	17	8	13	36	21	13	16	9	14	40	23	14	3.2
100	85	23	24	28	22	6	5	21	28	33	26	7	6	2.3
101	73	35	20	17	25	8	3	32	27	23	34	11	4	2.4
102	63	45	26	21	12	2	2	42	41	33	19	3	3	1.9
103	78	30	14	15	25	17	7	28	18	19	32	22	9	2.8
104	87	21	6	6	30	32	13	19	7	7	34	37	15	3.5
105	80	28	18	7	23	23	9	26	23	9	29	29	11	3.0
106	97	11	5	16	28	34	14	10	5	16	29	35	14	3.4
107	94	14	1	16	40	28	9	13	1	17	43	30	10	3.3
108	85	23	16	16	27	18	8	21	19	19	32	21	9	2.8

TABLE 18 : RESPONDENTS BY EXPERIENCE : CURRENT SUBJECT : 6-10 YEARS

No of cases = 54

Ques no	No of replies	Number of scores						Percentage of replies						Weighted Average
		0	1	2	3	4	5	0	1	2	3	4	5	
2	54	0	27	27	0	0	0	0	50	50	0	0	0	1.5
3	54	0	24	10	20	0	0	0	44	19	37	0	0	1.9
4	54	0	22	21	11	0	0	0	41	39	20	0	0	1.8
5	54	0	34	14	5	1	0	0	63	26	9	2	0	1.5
6	54	0	0	36	18	0	0	0	0	67	33	0	0	2.3
7	54	0	0	54	0	0	0	0	0	100	0	0	0	2.0
8	53	1	14	35	4	0	0	2	26	66	8	0	0	1.8
9	54	0	7	6	14	15	12	0	13	11	26	28	22	3.4
10	54	0	1	2	12	25	14	0	2	4	22	46	26	3.9
11	54	0	5	9	19	16	5	0	9	17	35	30	9	3.1
12	54	0	2	3	5	26	18	0	4	6	9	48	33	4.0
13	54	0	14	11	12	14	3	0	26	20	22	26	6	2.6
14	54	0	9	9	14	15	7	0	17	17	26	28	13	3.0
15	54	0	12	5	17	13	7	0	22	9	31	24	13	3.0
16	54	0	4	3	16	25	6	0	7	6	30	46	11	3.5
17	54	0	1	1	9	15	28	0	2	2	17	28	52	4.3
18	54	0	5	17	11	11	10	0	9	31	20	20	19	3.1
19	54	0	13	17	17	5	2	0	24	31	31	9	4	2.4
20	54	0	2	6	8	19	19	0	4	11	15	35	35	3.9
21	54	0	17	8	13	11	5	0	31	15	24	20	9	2.6
22	54	0	16	8	15	11	4	0	30	15	28	20	7	2.6
23	54	0	16	10	11	15	2	0	30	19	20	28	4	2.6
24	54	0	26	7	11	6	4	0	48	13	20	11	7	2.2
25	54	0	18	8	12	11	5	0	33	15	22	20	9	2.6
26	54	0	26	11	12	2	3	0	48	20	22	4	6	2.0
27	54	0	4	7	7	17	19	0	7	13	13	31	35	3.7
28	54	0	6	10	11	18	9	0	11	19	20	33	17	3.3
29	54	0	8	10	9	18	9	0	15	19	17	33	17	3.2
30	54	0	12	13	10	12	7	0	22	24	19	22	13	2.8
31	54	0	3	7	14	20	10	0	6	13	26	37	19	3.5
32	54	0	5	7	7	20	15	0	9	13	13	37	28	3.6
33	54	0	13	18	14	8	1	0	24	33	26	15	2	2.4
34	54	0	28	11	13	1	1	0	52	20	24	2	2	1.8
35	54	0	4	9	12	17	12	0	7	17	22	31	22	3.4
36	54	0	3	8	14	16	13	0	6	15	26	30	24	3.5
37	54	0	13	13	13	7	8	0	24	24	24	13	15	2.7
38	54	0	14	13	11	9	7	0	26	24	20	17	13	2.7
39	54	0	17	13	12	6	6	0	31	24	22	11	11	2.5
40	54	0	12	13	8	16	5	0	22	24	15	30	9	2.8
41	54	0	7	4	21	15	7	0	13	7	39	28	13	3.2
42	54	0	17	13	15	6	3	0	31	24	28	11	6	2.4
43	54	0	8	7	11	15	13	0	15	13	20	28	24	3.3
44	54	0	5	10	15	14	10	0	9	19	28	26	19	3.3
45	54	0	0	2	5	18	29	0	0	4	9	33	54	4.4
46	54	0	2	2	14	16	20	0	4	4	26	30	37	3.9
47	54	0	13	10	21	7	3	0	24	19	39	13	6	2.6
48	54	0	14	8	17	8	7	0	26	15	31	15	13	2.7
49	54	0	41	5	7	1	0	0	76	9	13	2	0	1.4
50	54	0	18	9	13	8	6	0	33	17	24	15	11	2.5
51	54	0	7	9	15	14	9	0	13	17	28	26	17	3.2
52	54	0	30	7	10	5	2	0	56	13	19	9	4	1.9

Ques no	No of replies	Number of scores						Percentage of replies						Weighted Average
		0	1	2	3	4	5	0	1	2	3	4	5	
53	54	0	8	7	9	15	15	0	15	13	17	28	28	3.4
54	54	0	6	3	4	20	21	0	11	6	7	37	39	3.9
55	54	0	9	4	11	14	16	0	17	7	20	26	30	3.4
56	54	0	11	1	18	15	9	0	20	2	33	28	17	3.2
57	54	0	15	9	15	8	7	0	28	17	28	15	13	2.7
58	54	0	34	6	10	3	1	0	63	11	19	6	2	1.7
59	54	0	16	12	10	6	10	0	30	22	19	11	19	2.7
60	54	0	7	5	13	14	15	0	13	9	24	26	28	3.5
61	54	0	28	8	8	7	3	0	52	15	15	13	6	2.1
62	54	0	0	1	0	9	44	0	0	2	0	17	81	4.8
63	54	0	2	8	15	21	8	0	4	15	28	39	15	3.5
64	54	0	22	10	13	6	3	0	41	19	24	11	6	2.2
65	49	5	18	8	4	10	9	9	37	16	8	20	18	2.7
66	49	5	3	7	15	10	14	9	6	14	31	20	29	3.5
67	49	5	9	13	9	7	11	9	18	27	18	14	22	3.0
68	49	5	7	6	12	16	8	9	14	12	24	33	16	3.2
69	49	5	12	15	9	6	7	9	24	31	18	12	14	2.6
70	52	2	0	4	18	29	1	4	0	8	35	56	2	3.5
71	44	10	3	5	20	15	1	19	7	11	45	34	2	3.1
72	51	3	1	3	15	25	7	6	2	6	29	49	14	3.7
73	44	10	4	6	9	15	10	19	9	14	20	34	23	3.5
74	46	8	4	8	15	11	8	15	9	17	33	24	17	3.2
75	48	6	3	6	19	15	5	11	6	13	40	31	10	3.3
76	50	4	2	5	12	24	7	7	4	10	24	48	14	3.6
77	49	5	3	8	9	19	10	9	6	16	18	39	20	3.5
78	51	3	16	10	12	10	3	6	31	20	24	20	6	2.5
79	44	10	3	1	18	17	5	19	7	2	41	39	11	3.5
80	45	9	4	6	13	16	6	17	9	13	29	36	13	3.3
81	40	14	11	9	11	7	2	26	28	23	28	18	5	2.5
82	43	11	4	12	16	10	1	20	9	28	37	23	2	2.8
83	36	18	10	10	8	7	1	33	28	28	22	19	3	2.4
84	44	10	7	6	16	9	6	19	16	14	36	20	14	3.0
85	41	13	4	8	14	11	4	24	10	20	34	27	10	3.1
86	40	14	10	11	11	8	0	26	25	28	28	20	0	2.4
87	46	8	3	7	13	14	9	15	7	15	28	30	20	3.4
88	50	4	4	8	14	15	9	7	8	16	28	30	18	3.3
89	50	4	1	6	8	22	13	7	2	12	16	44	26	3.8
90	50	4	1	5	12	18	14	7	2	10	24	36	28	3.8
91	42	12	9	15	10	6	2	22	21	36	24	14	5	2.5
92	41	13	11	5	15	7	3	24	27	12	37	17	7	2.7
93	33	21	19	4	6	4	0	39	58	12	18	12	0	1.8
94	44	10	6	10	14	11	3	19	14	23	32	25	7	2.9
95	46	8	4	4	15	16	7	15	9	9	33	35	15	3.4
96	44	10	10	9	9	10	6	19	23	20	20	23	14	2.8
97	45	9	7	3	11	19	5	17	16	7	24	42	11	3.3
98	45	9	1	8	16	13	7	17	2	18	36	29	16	3.4
99	45	9	1	10	17	11	6	17	2	22	38	24	13	3.2
100	40	14	10	13	7	8	2	26	25	33	18	20	5	2.5
101	39	15	11	7	11	6	4	28	28	18	28	15	10	2.6
102	33	21	20	4	5	4	0	39	61	12	15	12	0	1.8
103	39	15	10	9	7	12	1	28	26	23	18	31	3	2.6
104	42	12	6	5	13	12	6	22	14	12	31	29	14	3.2
105	36	18	13	4	10	6	3	33	36	11	28	17	8	2.5
106	48	6	0	11	12	17	8	11	0	23	25	35	17	3.5
107	47	7	3	4	18	19	3	13	6	9	38	40	6	3.3
108	39	15	5	8	15	10	1	28	13	21	38	26	3	2.8

TABLE 19 : RESPONDENTS BY EXPERIENCE : CURRENT SUBJECT : 11+ YEARS

No of cases = 44

Ques no	No of replies	Number of scores						Percentage of replies						Weighted Average
		0	1	2	3	4	5	0	1	2	3	4	5	
2	44	0	22	22	0	0	0	0	50	50	0	0	0	1.5
3	44	0	18	6	20	0	0	0	41	14	45	0	0	2.0
4	44	0	16	16	12	0	0	0	36	36	27	0	0	1.9
5	44	0	21	16	7	0	0	0	48	36	16	0	0	1.7
6	44	0	0	0	44	0	0	0	0	0	100	0	0	3.0
7	44	0	0	0	44	0	0	0	0	0	100	0	0	3.0
8	44	0	5	34	5	0	0	0	11	77	11	0	0	2.0
9	44	0	1	5	15	17	6	0	2	11	34	39	14	3.5
10	44	0	1	3	7	18	15	0	2	7	16	41	34	4.0
11	44	0	2	7	12	20	3	0	5	16	27	45	7	3.3
12	44	0	1	4	8	22	9	0	2	9	18	50	20	3.8
13	44	0	8	10	15	8	3	0	18	23	34	18	7	2.7
14	44	0	5	10	14	8	7	0	11	23	32	18	16	3.0
15	44	0	14	10	10	7	3	0	32	23	23	16	7	2.4
16	44	0	9	6	12	13	4	0	20	14	27	30	9	2.9
17	44	0	2	2	6	9	25	0	5	5	14	20	57	4.2
18	44	0	14	9	12	5	4	0	32	20	27	11	9	2.5
19	44	0	17	9	8	8	2	0	39	20	18	18	5	2.3
20	44	0	3	1	12	13	15	0	7	2	27	30	34	3.8
21	44	0	14	12	10	7	1	0	32	27	23	16	2	2.3
22	44	0	20	6	7	6	5	0	45	14	16	14	11	2.3
23	44	0	16	5	10	7	6	0	36	11	23	16	14	2.6
24	44	0	27	7	9	0	1	0	61	16	20	0	2	1.7
25	44	0	22	4	13	4	1	0	50	9	30	9	2	2.0
26	44	0	25	4	6	9	0	0	57	9	14	20	0	2.0
27	44	0	0	6	11	11	16	0	0	14	25	25	36	3.8
28	44	0	6	12	10	5	11	0	14	27	23	11	25	3.1
29	44	0	11	6	10	7	10	0	25	14	23	16	23	3.0
30	44	0	16	7	10	7	4	0	36	16	23	16	9	2.5
31	44	0	3	4	6	16	15	0	7	9	14	36	34	3.8
32	44	0	7	1	9	13	14	0	16	2	20	30	32	3.6
33	44	0	9	14	8	8	5	0	20	32	18	18	11	2.7
34	44	0	26	9	7	0	2	0	59	20	16	0	5	1.7
35	44	0	4	2	17	10	11	0	9	5	39	23	25	3.5
36	44	0	5	5	13	14	7	0	11	11	30	32	16	3.3
37	44	0	15	9	8	10	2	0	34	20	18	23	5	2.4
38	44	0	12	13	11	5	3	0	27	30	25	11	7	2.4
39	44	0	20	13	3	3	5	0	45	30	7	7	11	2.1
40	44	0	10	8	14	7	5	0	23	18	32	16	11	2.8
41	44	0	12	9	9	10	4	0	27	20	20	23	9	2.7
42	44	0	18	12	5	5	4	0	41	27	11	11	9	2.2
43	44	0	9	6	6	15	8	0	20	14	14	34	18	3.2
44	44	0	10	9	9	8	8	0	23	20	20	18	18	2.9
45	44	0	1	5	3	10	25	0	2	11	7	23	57	4.2
46	44	0	6	6	2	15	15	0	14	14	5	34	34	3.6
47	44	0	13	14	11	4	2	0	30	32	25	9	5	2.3
48	44	0	20	5	4	8	7	0	45	11	9	18	16	2.5
49	44	0	35	7	1	1	0	0	80	16	2	2	0	1.3
50	44	0	17	5	12	5	5	0	39	11	27	11	11	2.5
51	44	0	7	6	15	10	6	0	16	14	34	23	14	3.0
52	44	0	20	8	8	1	7	0	45	18	18	2	16	2.3

Ques no	No of replies	Number of scores						Percentage of replies						Weighted Average
		0	1	2	3	4	5	0	1	2	3	4	5	
53	44	0	15	5	8	7	9	0	34	11	18	16	20	2.8
54	44	0	7	3	9	8	17	0	16	7	20	18	39	3.6
55	44	0	9	3	7	13	12	0	20	7	16	30	27	3.4
56	44	0	12	7	11	4	10	0	27	16	25	9	23	2.8
57	44	0	21	8	4	5	6	0	48	18	9	11	14	2.3
58	44	0	34	3	2	5	0	0	77	7	5	11	0	1.5
59	44	0	20	6	8	4	6	0	45	14	18	9	14	2.3
60	44	0	9	3	8	11	13	0	20	7	18	25	30	3.4
61	44	0	23	5	10	1	5	0	52	11	23	2	11	2.1
62	44	0	1	0	1	10	32	0	2	0	2	23	73	4.6
63	44	0	5	3	17	13	6	0	11	7	39	30	14	3.3
64	44	0	21	11	6	6	0	0	48	25	14	14	0	1.9
65	43	1	17	9	3	6	8	2	40	21	7	14	19	2.5
66	43	1	6	8	7	8	14	2	14	19	16	19	33	3.4
67	43	1	6	10	8	11	8	2	14	23	19	26	19	3.1
68	43	1	4	5	12	14	8	2	9	12	28	33	19	3.4
69	43	1	10	11	13	4	5	2	23	26	30	9	12	2.6
70	43	1	0	5	13	23	2	2	0	12	30	53	5	3.5
71	38	6	1	5	21	8	3	14	3	13	55	21	8	3.2
72	44	0	1	5	10	18	10	0	2	11	23	41	23	3.7
73	38	6	0	5	11	16	6	14	0	13	29	42	16	3.6
74	40	4	2	5	9	20	4	9	5	13	23	50	10	3.5
75	41	3	4	4	17	14	2	7	10	10	41	34	5	3.1
76	44	0	1	6	15	16	6	0	2	14	34	36	14	3.5
77	41	3	2	5	13	11	10	7	5	12	32	27	24	3.5
78	42	2	13	6	14	6	3	5	31	14	33	14	7	2.5
79	38	6	3	3	10	17	5	14	8	8	26	45	13	3.5
80	37	7	1	5	11	14	6	16	3	14	30	38	16	3.5
81	31	13	7	10	7	6	1	30	23	32	23	19	3	2.5
82	32	12	8	9	9	4	2	27	25	28	28	13	6	2.5
83	28	16	8	7	8	3	2	36	29	25	29	11	7	2.4
84	32	12	3	7	14	5	3	27	9	22	44	16	9	2.9
85	34	10	2	8	12	7	5	23	6	24	35	21	15	3.1
86	32	12	9	6	10	5	2	27	28	19	31	16	6	2.5
87	35	9	3	2	11	10	9	20	9	6	31	29	26	3.6
88	41	3	1	7	7	19	7	7	2	17	17	46	17	3.6
89	41	3	1	4	11	16	9	7	2	10	27	39	22	3.7
90	40	4	2	2	11	17	8	9	5	5	28	43	20	3.7
91	34	10	9	9	13	0	3	23	26	26	38	0	9	2.4
92	31	13	10	5	10	2	4	30	32	16	32	6	13	2.5
93	25	19	17	3	3	0	2	43	68	12	12	0	8	1.7
94	31	13	6	3	9	10	3	30	19	10	29	32	10	3.0
95	38	6	0	5	13	14	6	14	0	13	34	37	16	3.6
96	32	12	5	5	6	9	7	27	16	16	19	28	22	3.3
97	35	9	1	3	11	15	5	20	3	9	31	43	14	3.6
98	37	7	0	5	12	12	8	16	0	14	32	32	22	3.6
99	36	8	2	4	12	13	5	18	6	11	33	36	14	3.4
100	31	13	7	9	13	1	1	30	23	29	42	3	3	2.4
101	27	17	9	4	9	3	2	39	33	15	33	11	7	2.4
102	25	19	13	5	6	0	1	43	52	20	24	0	4	1.8
103	29	15	7	4	10	6	2	34	24	14	34	21	7	2.7
104	35	9	3	1	13	9	9	20	9	3	37	26	26	3.6
105	29	15	5	5	7	6	6	34	17	17	24	21	21	3.1
106	39	5	2	2	10	17	8	11	5	5	26	44	21	3.7
107	38	6	1	2	14	18	3	14	3	5	37	47	8	3.5
108	32	12	4	8	12	6	2	27	13	25	38	19	6	2.8

TABLE 20 : RESPONDENTS BY PROFESSIONAL LIFE-CYCLE : PHASE 1

No of cases = 67

Ques no	No of replies	Number of scores						Percentage of replies						Weighted Average
		0	1	2	3	4	5	0	1	2	3	4	5	
2	67	0	26	41	0	0	0	0	39	61	0	0	0	1.6
3	67	0	19	12	36	0	0	0	28	18	54	0	0	2.3
4	67	0	47	14	6	0	0	0	70	21	9	0	0	1.4
5	67	0	30	27	10	0	0	0	45	40	15	0	0	1.7
6	67	0	33	17	17	0	0	0	49	25	25	0	0	1.8
7	67	0	48	14	5	0	0	0	72	21	7	0	0	1.4
8	67	0	67	0	0	0	0	0	100	0	0	0	0	1.0
9	67	0	6	5	15	23	18	0	9	7	22	34	27	3.6
10	67	0	2	9	12	22	22	0	3	13	18	33	33	3.8
11	67	0	4	10	18	29	6	0	6	15	27	43	9	3.3
12	67	0	0	6	11	23	27	0	0	9	16	34	40	4.1
13	67	0	9	11	22	20	5	0	13	16	33	30	7	3.0
14	67	0	4	9	20	19	15	0	6	13	30	28	22	3.5
15	67	0	12	10	23	11	11	0	18	15	34	16	16	3.0
16	67	0	3	8	17	26	13	0	4	12	25	39	19	3.6
17	67	0	1	0	10	11	45	0	1	0	15	16	67	4.5
18	67	0	10	10	17	18	12	0	15	15	25	27	18	3.2
19	67	0	19	15	22	7	4	0	28	22	33	10	6	2.4
20	67	0	5	6	7	20	29	0	7	9	10	30	43	3.9
21	67	0	17	12	19	15	4	0	25	18	28	22	6	2.7
22	67	0	18	8	22	11	8	0	27	12	33	16	12	2.7
23	67	0	12	11	20	13	11	0	18	16	30	19	16	3.0
24	67	0	27	15	13	9	3	0	40	22	19	13	4	2.2
25	67	0	22	12	12	16	5	0	33	18	18	24	7	2.6
26	67	0	27	14	15	9	2	0	40	21	22	13	3	2.2
27	67	0	6	8	15	16	22	0	9	12	22	24	33	3.6
28	67	0	3	16	15	21	12	0	4	24	22	31	18	3.3
29	67	0	8	6	15	16	22	0	12	9	22	24	33	3.6
30	67	0	10	10	19	20	8	0	15	15	28	30	12	3.1
31	67	0	4	6	16	23	18	0	6	9	24	34	27	3.7
32	67	0	5	7	9	29	17	0	7	10	13	43	25	3.7
33	67	0	19	15	20	6	7	0	28	22	30	9	10	2.5
34	67	0	30	17	13	3	4	0	45	25	19	4	6	2.0
35	67	0	2	6	18	22	19	0	3	9	27	33	28	3.7
36	67	0	5	8	17	21	16	0	7	12	25	31	24	3.5
37	67	0	16	13	13	18	7	0	24	19	19	27	10	2.8
38	67	0	18	15	17	9	8	0	27	22	25	13	12	2.6
39	67	0	20	13	13	12	9	0	30	19	19	18	13	2.7
40	67	0	13	17	15	16	6	0	19	25	22	24	9	2.8
41	67	0	8	12	14	23	10	0	12	18	21	34	15	3.2
42	67	0	24	15	12	12	4	0	36	22	18	18	6	2.4
43	67	0	7	7	15	23	15	0	10	10	22	34	22	3.5
44	67	0	6	9	19	17	16	0	9	13	28	25	24	3.4
45	67	0	1	2	5	11	48	0	1	3	7	16	72	4.5
46	67	0	6	6	7	19	29	0	9	9	10	28	43	3.9
47	67	0	12	16	19	15	5	0	18	24	28	22	7	2.8
48	67	0	24	12	9	14	8	0	36	18	13	21	12	2.6
49	67	0	43	10	8	5	1	0	64	15	12	7	1	1.7
50	67	0	18	10	15	13	11	0	27	15	22	19	16	2.8
51	67	0	8	4	19	20	16	0	12	6	28	30	24	3.5
52	67	0	23	6	15	13	10	0	34	9	22	19	15	2.7

Ques no	No of replies	Number of scores						Percentage of replies						Weighted Average
		0	1	2	3	4	5	0	1	2	3	4	5	
53	67	0	11	5	18	14	19	0	16	7	27	21	28	3.4
54	67	0	3	5	8	15	36	0	4	7	12	22	54	4.1
55	67	0	6	5	15	11	30	0	9	7	22	16	45	3.8
56	67	0	11	6	11	24	15	0	16	9	16	36	22	3.4
57	67	0	23	8	15	12	9	0	34	12	22	18	13	2.6
58	67	0	43	5	12	5	2	0	64	7	18	7	3	1.8
59	67	0	19	14	8	13	13	0	28	21	12	19	19	2.8
60	67	0	8	4	8	19	28	0	12	6	12	28	42	3.8
61	67	0	25	6	14	15	7	0	37	9	21	22	10	2.6
62	67	0	1	0	0	6	60	0	1	0	0	9	90	4.9
63	67	0	5	8	21	24	9	0	7	12	31	36	13	3.4
64	67	0	31	13	17	3	3	0	46	19	25	4	4	2.0
65	66	1	29	9	5	11	12	1	44	14	8	17	18	2.5
66	66	1	5	15	14	11	21	1	8	23	21	17	32	3.4
67	66	1	5	17	15	15	14	1	8	26	23	23	21	3.2
68	66	1	10	13	18	13	12	1	15	20	27	20	18	3.1
69	66	1	17	12	14	16	7	1	26	18	21	24	11	2.8
70	65	2	0	5	19	34	7	3	0	8	29	52	11	3.7
71	55	12	1	6	31	14	3	18	2	11	56	25	5	3.2
72	65	2	1	4	22	31	7	3	2	6	34	48	11	3.6
73	56	11	3	6	11	21	15	16	5	11	20	38	27	3.7
74	62	5	3	6	24	19	10	7	5	10	39	31	16	3.4
75	60	7	3	3	30	22	2	10	5	5	50	37	3	3.3
76	63	4	1	7	20	30	5	6	2	11	32	48	8	3.5
77	63	4	6	11	14	19	13	6	10	17	22	30	21	3.3
78	61	6	14	16	18	10	3	9	23	26	30	16	5	2.5
79	56	11	0	5	18	23	10	16	0	9	32	41	18	3.7
80	59	8	1	11	15	24	8	12	2	19	25	41	14	3.5
81	48	19	5	15	17	9	2	28	10	31	35	19	4	2.8
82	52	15	4	9	23	14	2	22	8	17	44	27	4	3.0
83	47	20	12	5	21	7	2	30	26	11	45	15	4	2.6
84	52	15	4	8	25	13	2	22	8	15	48	25	4	3.0
85	54	13	3	8	21	18	4	19	6	15	39	33	7	3.2
86	51	16	7	8	22	12	2	24	14	16	43	24	4	2.9
87	53	14	1	7	15	20	10	21	2	13	28	38	19	3.6
88	64	3	2	7	24	22	9	4	3	11	38	34	14	3.5
89	65	2	1	7	15	23	19	3	2	11	23	35	29	3.8
90	60	7	2	7	13	26	12	10	3	12	22	43	20	3.7
91	53	14	8	14	24	4	3	21	15	26	45	8	6	2.6
92	47	20	10	10	18	7	2	30	21	21	38	15	4	2.6
93	40	27	17	12	9	1	1	40	43	30	23	3	3	1.9
94	53	14	8	11	18	12	4	21	15	21	34	23	8	2.9
95	62	5	5	5	22	20	10	7	8	8	35	32	16	3.4
96	57	10	7	5	16	18	11	15	12	9	28	32	19	3.4
97	58	9	3	7	18	21	9	13	5	12	31	36	16	3.4
98	60	7	0	8	23	19	10	10	0	13	38	32	17	3.5
99	58	9	5	10	20	14	9	13	9	17	34	24	16	3.2
100	53	14	11	18	13	8	3	21	21	34	25	15	6	2.5
101	45	22	9	12	18	4	2	33	20	27	40	9	4	2.5
102	41	26	17	12	9	2	1	39	41	29	22	5	2	2.0
103	51	16	9	11	14	14	3	24	18	22	27	27	6	2.8
104	56	11	5	5	16	18	12	16	9	9	29	32	21	3.5
105	51	16	8	4	17	15	7	24	16	8	33	29	14	3.2
106	59	8	2	10	14	24	9	12	3	17	24	41	15	3.5
107	57	10	2	6	23	20	6	15	4	11	40	35	11	3.4
108	52	15	6	10	19	13	4	22	12	19	37	25	8	3.0

TABLE 21 : RESPONDENTS BY PROFESSIONAL LIFE-CYCLE : PHASE 2

No of cases = 118

Ques no	No of replies	Number of scores						Percentage of replies						Weighted Average
		0	1	2	3	4	5	0	1	2	3	4	5	
2	118	0	66	52	0	0	0	0	56	44	0	0	0	1.4
3	118	0	56	23	39	0	0	0	47	19	33	0	0	1.9
4	118	0	62	37	19	0	0	0	53	31	16	0	0	1.6
5	118	0	65	38	14	1	0	0	55	32	12	1	0	1.6
6	118	0	36	28	54	0	0	0	31	24	46	0	0	2.2
7	118	0	49	35	34	0	0	0	42	30	29	0	0	1.9
8	118	0	0	118	0	0	0	0	0	100	0	0	0	2.0
9	118	0	10	14	36	41	17	0	8	12	31	35	14	3.3
10	118	0	4	7	28	52	27	0	3	6	24	44	23	3.8
11	118	0	13	18	35	37	15	0	11	15	30	31	13	3.2
12	118	0	4	5	20	60	29	0	3	4	17	51	25	3.9
13	118	0	23	26	34	22	13	0	19	22	29	19	11	2.8
14	118	0	18	17	32	35	16	0	15	14	27	30	14	3.1
15	118	0	34	22	30	20	12	0	29	19	25	17	10	2.6
16	118	0	15	10	39	44	10	0	13	8	33	37	8	3.2
17	118	0	2	3	18	37	58	0	2	3	15	31	49	4.2
18	118	0	23	24	29	21	21	0	19	20	25	18	18	2.9
19	118	0	33	29	31	21	4	0	28	25	26	18	3	2.4
20	118	0	4	11	25	47	31	0	3	9	21	40	26	3.8
21	118	0	35	31	28	18	6	0	30	26	24	15	5	2.4
22	118	0	43	17	24	22	12	0	36	14	20	19	10	2.5
23	118	0	36	20	22	26	14	0	31	17	19	22	12	2.7
24	118	0	64	20	23	6	5	0	54	17	19	5	4	1.9
25	118	0	40	16	33	21	8	0	34	14	28	18	7	2.5
26	118	0	61	21	20	13	3	0	52	18	17	11	3	1.9
27	118	0	10	15	22	45	26	0	8	13	19	38	22	3.5
28	118	0	18	19	32	30	19	0	15	16	27	25	16	3.1
29	118	0	23	21	22	34	18	0	19	18	19	29	15	3.0
30	118	0	29	22	23	24	20	0	25	19	19	20	17	2.9
31	118	0	9	9	28	40	32	0	8	8	24	34	27	3.7
32	118	0	14	11	20	40	33	0	12	9	17	34	28	3.6
33	118	0	27	36	34	17	4	0	23	31	29	14	3	2.4
34	118	0	72	25	17	4	0	0	61	21	14	3	0	1.6
35	118	0	12	15	33	34	24	0	10	13	28	29	20	3.4
36	118	0	8	15	34	36	25	0	7	13	29	31	21	3.5
37	118	0	31	21	34	18	14	0	26	18	29	15	12	2.7
38	118	0	22	32	28	20	16	0	19	27	24	17	14	2.8
39	118	0	39	33	20	11	15	0	33	28	17	9	13	2.4
40	118	0	22	20	31	27	18	0	19	17	26	23	15	3.0
41	118	0	19	17	43	28	11	0	16	14	36	24	9	3.0
42	118	0	45	29	23	13	8	0	38	25	19	11	7	2.2
43	118	0	21	18	20	39	20	0	18	15	17	33	17	3.2
44	118	0	20	26	33	21	18	0	17	22	28	18	15	2.9
45	118	0	2	6	9	32	69	0	2	5	8	27	58	4.4
46	118	0	5	13	20	40	40	0	4	11	17	34	34	3.8
47	118	0	28	27	41	16	6	0	24	23	35	14	5	2.5
48	118	0	36	22	32	14	14	0	31	19	27	12	12	2.6
49	118	0	90	18	10	0	0	0	76	15	8	0	0	1.3
50	118	0	38	17	31	24	8	0	32	14	26	20	7	2.6
51	118	0	13	18	35	34	18	0	11	15	30	29	15	3.2
52	118	0	61	26	19	7	5	0	52	22	16	6	4	1.9

Ques no	No of replies	Number of scores 0	1	2	3	4	5	Percentage of replies 0	1	2	3	4	5	Weighted Average
53	118	0	28	19	22	24	25	0	24	16	19	20	21	3.0
54	118	0	17	6	15	40	40	0	14	5	13	34	34	3.7
55	118	0	20	11	23	40	24	0	17	9	19	34	20	3.3
56	118	0	26	12	37	19	24	0	22	10	31	16	20	3.0
57	118	0	41	24	24	13	16	0	35	20	20	11	14	2.5
58	118	0	77	16	16	6	3	0	65	14	14	5	3	1.7
59	118	0	43	17	22	20	16	0	36	14	19	17	14	2.6
60	118	0	20	8	25	37	28	0	17	7	21	31	24	3.4
61	118	0	64	18	20	12	4	0	54	15	17	10	3	1.9
62	118	0	2	1	5	23	87	0	2	1	4	19	74	4.6
63	118	0	6	11	41	40	20	0	5	9	35	34	17	3.5
64	118	0	44	25	32	13	4	0	37	21	27	11	3	2.2
65	114	4	46	18	11	17	22	3	40	16	10	15	19	2.6
66	114	4	10	18	25	26	35	3	9	16	22	23	31	3.5
67	114	4	18	33	21	23	19	3	16	29	18	20	17	2.9
68	114	4	17	12	28	34	23	3	15	11	25	30	20	3.3
69	114	4	23	33	29	14	15	3	20	29	25	12	13	2.7
70	117	1	0	8	42	64	3	1	0	7	36	55	3	3.5
71	94	24	5	16	43	28	2	20	5	17	46	30	2	3.1
72	117	1	2	8	37	51	19	1	2	7	32	44	16	3.7
73	96	22	3	12	27	38	16	19	3	13	28	40	17	3.5
74	104	14	5	15	37	39	8	12	5	14	36	38	8	3.3
75	107	11	6	17	45	33	6	9	6	16	42	31	6	3.1
76	114	4	2	11	39	51	11	3	2	10	34	45	10	3.5
77	108	10	7	15	30	43	13	8	6	14	28	40	12	3.4
78	114	4	29	23	32	23	7	3	25	20	28	20	6	2.6
79	98	20	5	6	42	37	8	17	5	6	43	38	8	3.4
80	96	22	3	13	34	35	11	19	3	14	35	36	11	3.4
81	86	32	16	29	29	10	2	27	19	34	34	12	2	2.5
82	90	28	10	26	34	18	2	24	11	29	38	20	2	2.7
83	75	43	21	21	20	11	2	36	28	28	27	15	3	2.4
84	90	28	8	19	35	20	8	24	9	21	39	22	9	3.0
85	89	29	6	18	40	19	6	25	7	20	45	21	7	3.0
86	80	38	16	19	34	10	1	32	20	24	43	13	1	2.5
87	94	24	7	12	27	32	16	20	7	13	29	34	17	3.4
88	107	11	7	11	30	43	16	9	7	10	28	40	15	3.5
89	110	8	1	7	26	50	26	7	1	6	24	45	24	3.8
90	110	8	2	9	33	42	24	7	2	8	30	38	22	3.7
91	93	25	19	34	33	3	4	21	20	37	35	3	4	2.3
92	88	30	20	14	37	10	7	25	23	16	42	11	8	2.7
93	67	51	40	13	12	1	1	43	60	19	18	1	1	1.7
94	92	26	18	12	30	25	7	22	20	13	33	27	8	2.9
95	101	17	3	10	30	42	16	14	3	10	30	42	16	3.6
96	88	30	22	12	16	24	14	25	25	14	18	27	16	3.0
97	93	25	7	9	31	38	8	21	8	10	33	41	9	3.3
98	95	23	1	14	39	27	14	19	1	15	41	28	15	3.4
99	94	24	2	14	41	26	11	20	2	15	44	28	12	3.3
100	83	35	20	27	28	6	2	30	24	33	34	7	2	2.3
101	76	42	21	15	24	11	5	36	28	20	32	14	7	2.5
102	65	53	32	17	13.	2	1	45	49	26	20	3	2	1.8
103	76	42	17	14	22	18	5	36	22	18	29	24	7	2.7
104	88	30	9	6	33	29	11	25	10	7	38	33	13	3.3
105	76	42	23	10	21	15	7	36	30	13	28	20	9	2.6
106	104	14	2	15	32	40	15	12	2	14	31	38	14	3.5
107	102	16	3	12	38	40	9	14	3	12	37	39	9	3.4
108	87	31	15	17	29	19	7	26	17	20	33	22	8	2.8

TABLE 22 : RESPONDENTS BY PROFESSIONAL LIFE-CYCLE : PHASE 3

No of cases = 20

Ques no	No of replies	Number of scores						Percentage of replies						Weighted Average
		0	1	2	3	4	5	0	1	2	3	4	5	
2	20	0	8	12	0	0	0	0	40	60	0	0	0	1.6
3	20	0	0	8	12	0	0	0	0	40	60	0	0	2.6
4	20	0	12	4	4	0	0	0	60	20	20	0	0	1.6
5	20	0	8	5	7	0	0	0	40	25	35	0	0	2.0
6	20	0	7	8	5	0	0	0	35	40	25	0	0	1.9
7	20	0	11	4	5	0	0	0	55	20	25	0	0	1.7
8	20	0	0	0	20	0	0	0	0	0	100	0	0	3.0
9	20	0	0	3	1	5	11	0	0	15	5	25	55	4.2
10	20	0	1	3	5	7	4	0	5	15	25	35	20	3.5
11	20	0	1	1	7	6	5	0	5	5	35	30	25	3.7
12	20	0	1	1	0	6	12	0	5	5	0	30	60	4.4
13	20	0	3	2	5	5	5	0	15	10	25	25	25	3.4
14	20	0	2	3	8	2	5	0	10	15	40	10	25	3.3
15	20	0	4	2	1	6	7	0	20	10	5	30	35	3.5
16	20	0	4	2	4	5	5	0	20	10	20	25	25	3.3
17	20	0	0	1	1	1	17	0	0	5	5	5	85	4.7
18	20	0	1	1	5	6	7	0	5	5	25	30	35	3.9
19	20	0	8	4	4	3	1	0	40	20	20	15	5	2.3
20	20	0	2	0	5	4	9	0	10	0	25	20	45	3.9
21	20	0	5	4	5	5	1	0	25	20	25	25	5	2.7
22	20	0	6	3	2	6	3	0	30	15	10	30	15	2.9
23	20	0	7	4	2	4	3	0	35	20	10	20	15	2.6
24	20	0	10	3	3	2	2	0	50	15	15	10	10	2.2
25	20	0	9	3	4	1	3	0	45	15	20	5	15	2.3
26	20	0	11	0	3	4	2	0	55	0	15	20	10	2.3
27	20	0	3	3	6	4	4	0	15	15	30	20	20	3.2
28	20	0	3	2	3	7	5	0	15	10	15	35	25	3.5
29	20	0	3	1	5	5	6	0	15	5	25	25	30	3.5
30	20	0	2	1	2	7	8	0	10	5	10	35	40	3.9
31	20	0	1	4	2	6	7	0	5	20	10	30	35	3.7
32	20	0	2	1	3	4	10	0	10	5	15	20	50	4.0
33	20	0	4	4	6	4	2	0	20	20	30	20	10	2.8
34	20	0	11	5	3	0	1	0	55	25	15	0	5	1.8
35	20	0	1	2	5	6	6	0	5	10	25	30	30	3.7
36	20	0	0	1	2	7	10	0	0	5	10	35	50	4.3
37	20	0	7	2	4	3	4	0	35	10	20	15	20	2.8
38	20	0	5	1	7	2	5	0	25	5	35	10	25	3.1
39	20	0	5	1	3	4	7	0	25	5	15	20	35	3.4
40	20	0	4	4	7	2	3	0	20	20	35	10	15	2.8
41	20	0	4	5	3	2	6	0	20	25	15	10	30	3.1
42	20	0	6	4	6	3	1	0	30	20	30	15	5	2.5
43	20	0	1	3	0	8	8	0	5	15	0	40	40	4.0
44	20	0	6	3	2	3	6	0	30	15	10	15	30	3.0
45	20	0	0	1	2	6	11	0	0	5	10	30	55	4.4
46	20	0	2	0	8	1	9	0	10	0	40	5	45	3.8
47	20	0	7	3	3	1	6	0	35	15	15	5	30	2.8
48	20	0	8	3	3	3	3	0	40	15	15	15	15	2.5
49	20	0	18	0	1	1	0	0	90	0	5	5	0	1.3
50	20	0	8	4	3	0	5	0	40	20	15	0	25	2.5
51	20	0	2	1	2	6	9	0	10	5	10	30	45	4.0
52	20	0	6	7	2	2	3	0	30	35	10	10	15	2.5

Ques no	No of replies	Number of scores						Percentage of replies						Weighted Average
		0	1	2	3	4	5	0	1	2	3	4	5	
53	20	0	5	5	1	5	4	0	25	25	5	25	20	2.9
54	20	0	2	0	2	8	8	0	10	0	10	40	40	4.0
55	20	0	3	0	4	4	9	0	15	0	20	20	45	3.8
56	20	0	4	2	3	1	10	0	20	10	15	5	50	3.6
57	20	0	10	1	4	2	3	0	50	5	20	10	15	2.4
58	20	0	16	1	1	2	0	0	80	5	5	10	0	1.5
59	20	0	6	4	4	0	6	0	30	20	20	0	30	2.8
60	20	0	1	0	1	8	10	0	5	0	5	40	50	4.3
61	20	0	8	3	5	2	2	0	40	15	25	10	10	2.4
62	20	0	0	0	0	1	19	0	0	0	0	5	95	5.0
63	20	0	1	0	9	8	2	0	5	0	45	40	10	3.5
64	20	0	10	4	3	1	2	0	50	20	15	5	10	2.1
65	20	0	10	1	1	4	4	0	50	5	5	20	20	2.6
66	20	0	3	5	3	3	6	0	15	25	15	15	30	3.2
67	20	0	2	5	7	3	3	0	10	25	35	15	15	3.0
68	20	0	2	4	5	6	3	0	10	20	25	30	15	3.2
69	20	0	3	5	4	4	4	0	15	25	20	20	20	3.1
70	20	0	0	0	6	14	0	0	0	0	30	70	0	3.7
71	18	2	1	3	7	5	2	10	6	17	39	28	11	3.2
72	20	0	1	4	7	2	6	0	5	20	35	10	30	3.4
73	17	3	0	1	4	4	8	15	0	6	24	24	47	4.1
74	18	2	1	3	0	7	7	10	6	17	0	39	39	3.9
75	20	0	3	4	5	6	2	0	15	20	25	30	10	3.0
76	20	0	3	2	3	7	5	0	15	10	15	35	25	3.5
77	19	1	3	3	4	4	5	5	16	16	21	21	26	3.3
78	20	0	7	4	6	3	0	0	35	20	30	15	0	2.3
79	20	0	1	4	9	4	2	0	5	20	45	20	10	3.1
80	20	0	3	2	3	8	4	0	15	10	15	40	20	3.4
81	20	0	10	6	1	2	1	0	50	30	5	10	5	1.9
82	20	0	7	5	3	2	3	0	35	25	15	10	15	2.5
83	19	1	7	6	3	2	1	5	37	32	16	11	5	2.2
84	19	1	5	6	4	1	3	5	26	32	21	5	16	2.5
85	20	0	4	7	4	1	4	0	20	35	20	5	20	2.7
86	20	0	7	6	2	4	1	0	35	30	10	20	5	2.3
87	20	0	2	2	6	6	4	0	10	10	30	30	20	3.4
88	20	0	3	3	9	2	3	0	15	15	45	10	15	3.0
89	20	0	1	6	8	3	2	0	5	30	40	15	10	3.0
90	20	0	0	3	8	6	3	0	0	15	40	30	15	3.5
91	20	0	10	5	2	2	1	0	50	25	10	10	5	2.0
92	18	2	11	2	2	1	2	10	61	11	11	6	11	1.9
93	15	5	10	2	1	1	1	25	67	13	7	7	7	1.7
94	17	3	3	6	3	3	2	15	18	35	18	18	12	2.7
95	20	0	2	2	6	5	5	0	10	10	30	25	25	3.5
96	18	2	4	4	1	5	4	10	22	22	6	28	22	3.1
97	18	2	3	2	8	2	3	10	17	11	44	11	17	3.0
98	19	1	2	5	6	4	2	5	11	26	32	21	11	2.9
99	19	1	4	3	4	5	3	5	21	16	21	26	16	3.0
100	19	1	10	5	1	1	2	5	53	26	5	5	11	1.9
101	17	3	10	1	3	1	2	15	59	6	18	6	12	2.1
102	14	6	10	1	1	1	1	30	71	7	7	7	7	1.7
103	18	2	5	3	6	2	2	10	28	17	33	11	11	2.6
104	19	1	1	1	7	6	4	5	5	5	37	32	21	3.6
105	17	3	5	2	2	4	4	15	29	12	12	24	24	3.0
106	20	0	3	4	4	4	5	0	15	20	20	20	25	3.2
107	19	1	0	4	11	4	0	5	0	21	58	21	0	3.0
108	17	3	4	5	6	2	0	15	24	29	35	12	0	2.4

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